



Sacramento Audubon Society

P. O. Box 160694, Sacramento, CA 95816-0694

January 4, 2012

Honorable Board of Directors
Sacramento Regional County Sanitation District
10060 Goethe Rd.
Sacramento, CA 95827-3553

RE: Opposition to Further Study of Wind Turbines in Bufferlands.

Dear SRCSD Board of Directors:

This letter comes on behalf of Sacramento Audubon Society; Friends of the Swainson's Hawk; Save Our Sandhill Cranes; California Native Plant Society (CNPS), Sacramento Valley Chapter; Sacramento Area Creeks Council; Save the American River Association (SARA); Tuleyome; Habitat 2020 and the Environmental Council of Sacramento (ECOS). We are joined by Sacramento Audubon's sister chapters in the region, Sierra Foothills Audubon Society, San Joaquin Audubon Society and Yolo Audubon Society, as well as Audubon California. Together this local and regional coalition of organizations strongly urges the SRCSCD Board to immediately terminate further consideration of the conceptual proposal to install two, massive wind turbines in the Bufferlands.

As environmental protection and advocacy organizations, each of the above organizations generally supports green energy initiatives. However, as confirmed by the preliminary URS report that the District has commissioned, siting wind power facilities within the Bufferlands presents unacceptable hazards and mortality risks to an amazing diversity of bird and bat species, which, for over 20 years, the Bufferlands has been actively managed and enhanced to attract.

Moving forward with formal consideration of the Project by requesting the preparation of an EIR is inappropriate, because it will 1) signal to, and create an expectation by, the proponents of the Project that some form of wind power installation within the Bufferlands can and should be approved, and 2) impair, if not destroy, the goodwill that the District has generated within the environmental community for its stewardship and management of the Bufferlands, and lead to costly administrative and legal conflicts that will effectively erase any financial benefit that may be perceived from this proposal.

As discussed in the following points, we strongly urge the District to promptly terminate consideration of this ill-advised proposal, and direct staff to continue investigating other clean energy sources that do not pose such direct conflicts with the Bufferlands' important conservation purposes.

- **The Bufferlands Is an Incorporated Part of the Stone Lakes Area (NWR) Important Bird Area.** The Bufferlands is directly adjacent to Stone Lakes National Wildlife Refuge, and is included within the boundaries of National Audubon's designation of the Refuge as an "Important Bird Area" (IBA).¹ As described at Audubon California's website, "[t]he Sacramento Regional County Sanitation District Bufferlands (The Bufferlands) extend 2,650 acres of habitat north toward metropolitan Sacramento, and Delta Meadows River Park (State of California) extends the habitat south into the Sacramento Delta, essentially contiguous with the vast Cosumnes River Preserve."
- **The Bufferlands Hosts a Regionally Unique and Broad Diversity of Bird Species Throughout the Year.** Over 230 different bird species have been documented at the Bufferlands. Of note, these species include 1) the white-tailed kite, which is a "fully protected" species under state law; 2) the Swainson's Hawk, which is listed as "threatened" under state law; and 3) the Greater Sandhill Crane, which is listed as "threatened" under state law, and the Lesser Sandhill Crane, which is recognized by CDFG as a California bird species of special concern. As noted in Audubon California's IBA account for the Stone Lakes Area, the Bufferlands and neighboring Stone Lakes National Wildlife Refuge (which would also be directly, adversely impacted by the proposed turbines) are known to support large numbers of waterfowl (10,000+/day), and both migratory and wintering shorebirds (2,000+/day each of Dunlin and Black-bellied Plover winter at Bufferlands). The Bufferlands have seen peaks of Canvasback of 15-20,000 individuals, and Ring-necked Duck exceeding 2,000 birds. During surveys in 1998, Stone Lakes was found to support the largest breeding colony of Double-crested Cormorants (180 pr.) in the Central Valley. Audubon California's IBA account further notes that Swainson's Hawks and Burrowing Owls breed here, and heron rookeries host around 300 birds at Stone Lakes and 75 pairs at Bufferlands (Great Egret, Great Blue Heron).

Little is documented about bat populations at the Bufferlands to our knowledge, but it is well documented that bat mortalities are a major environmental risk of wind turbine installation. The URS report notes the problem. The URS report points out that no site comparable to the Bufferlands in wetland and wildlife values has ever installed a wind turbine, so data does not exist to estimate the expected mortality.

In sum, many of the diverse species that rely on the Bufferlands and neighboring conservation lands are protected by a quilt work of state and federal law, and appear at various times of the year using various habitats across the Bufferlands for a variety of purposes. As pointed out in the URS report, in order to mitigate the Project's impacts to all of these species, the time that the proposed wind turbines might be able to safely operate would be so unpredictable and sporadic as to render the project pointless.

¹ http://ca.audubon.org/maps/pdf/Stone_Lakes_Area.pdf.

- **Siting of Wind Turbines Near Areas That Have Been Dedicated to Promoting and Advancing Wildlife Habitat Protection or Near Wetlands Is Inappropriate.** The California Department of Fish and Game's (CDFG) 2007 Guidance document regarding siting of wind energy projects, *California Guidelines for Reducing Impacts to Birds and Bats from Wind Energy Development*, as adopted by the California Energy Commission, states, at page 9, "Wind development should not be considered on land protected by local, state, or federal government, such as designated wilderness areas, national parks or monuments, state parks, regional parks, and wildlife or nature preserves....particularly if no feasible avoidance or mitigation measures are available to reduce impacts."

CDFG's Guidelines, at page 6, suggest the following screening questions be addressed in the earliest stage of siting evaluation, to avoid wasting time or resources considering wind power installations in locations where they are fundamentally inappropriate:

1. Are any of the following species known or likely to occur on or near the proposed project site ("near" refers to a distance that is within the area used by an animal in the course of its normal movements and activities.):
 - a. Species listed as federal or state "Threatened" or "Endangered" (or candidates for such listing)?
 - b. Special-status birds or bats?
 - c. Fully protected birds?
2. Is the site near a raptor nest, or are large numbers of raptors known or likely to occur at or near the site during portions of the year?
3. Is the site near important staging or wintering areas for waterfowl, shorebirds, or raptors?
4. Are colonially breeding species (for example, herons, shorebirds, seabirds) known or likely to nest near the site?
5. Is the site likely to be used by birds whose behaviors include flight displays (for example, common nighthawks, horned larks) or by species whose foraging tactics put them at risk of collision (for example, contour hunting by golden eagles)?
6. Does the site or do adjacent areas include habitat features (for example, riparian habitat, water bodies) that might attract birds or bats for foraging, roosting, breeding, or cover?
7. Is the site near a known or potential bat roost?

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8. Does the site contain topographical features that could concentrate bird or bat movements (for example, ridges, peninsulas, or other landforms that might funnel bird or bat movement)? Is the site near a known or likely migrant stopover site?
9. Is the site regularly characterized by seasonal weather conditions such as dense fog or low cloud cover that might increase collision risks to birds and bats, and do these events occur at times when birds might be concentrated?

At a glance, these questions clearly demonstrate that the Bufferlands is a textbook case of the most inappropriate location imaginable for siting wind turbines, due to intractable conflicts with protected wildlife and habitats, including, but not limited to, wetlands on site that are used by bats and waterfowl. Put simply, CDFG's Guidelines demonstrate that the Bufferlands should not be considered at all for siting wind turbines according to the best available science.

- **The Bufferlands Hosts a Broad Range of Mandatory CEQA Mitigation Projects and other Cooperative Habitat Creation and Enhancement Projects That the District Owes A Legal and Ethical Duty to Protect.** The Bufferlands has hosted a substantial number of mandatory and voluntary habitat creation, restoration and enhancement projects. Some of the wildlife habitat projects at the Bufferlands are direct, mandatory, enforceable mitigation measures that have already been fully implemented in order to reduce the actual impacts that constructing the regional sewer plant and regional infrastructure required to serve the plant have had over the years.² Just a few examples include:
 - Fishhead Lake was created in 1982-3 to mitigate for wetland impacts caused by plant construction.
 - The City of Sacramento created a 17-acre wetland site north of Fishhead Lake to mitigate for impacts to Laguna Creek during flood control alterations.
 - Perhaps related to the Bradshaw Interceptor, a two-acre site was added to Fishhead Lake as required wetland mitigation around 1999 or 2000.
 - Several other riparian mitigation projects have been implemented related to interceptors coming into the plant: Upper Northwest Interceptor; Lower North West Interceptor; Laguna Interceptor Extension.

It would be illegal for the District to approve installing wind turbines in the Bufferlands that would compromise the habitat values of these mandatory mitigation projects, and kill the same wildlife that these prior enhancement and restoration projects were specifically designed and intended to attract and benefit.

² *Lincoln Place Tenants Ass'n. v. City of Los Angeles* (2005) 130 Cal.App.4th 1491, 1508.

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In addition, the District has worked with and accepted substantial contributions of labor and funds from other public and private entities to plan and carry out extensive wildlife habitat restoration and enhancement projects in the Bufferlands, and to publicly promote the District's environmental stewardship through its care and management of the Bufferlands for its significant habitat values.

- The US Army Corp sponsored a nearly \$2 million project on approximately 265 acres of the Bufferlands. We refrain from going into great detail here, only because the District is fully aware of this extensive undertaking, having documented the project and taken credit for its exemplary wildlife stewardship purposes at its own website, here: <http://www.srcsd.com/buffer-south.php>.
- Sacramento Tree Foundation Projects have been implemented at the Bufferlands using Tree Ordinance related mitigation funds.
- For the past two years, the Sacramento Audubon Society has funded the District's printing costs of a promotional Bufferlands calendar, again targeted at promoting the Districts' stewardship of and commitment to the Bufferland's wildlife habitats.
- Sacramento County Job Corps, the Packard Foundation, the Whitecap Foundation [connected with National Audubon], and the California Environmental Protection Agency were partners on the Upper Beach Lake Wildlife Enhancement Project, constructed between 1992 and 1996.

The history of many of these projects and activities is documented in the Central Valley Bird Club Fall 2007 Bulletin (Vol. 10, No. 4).³ As explained in the following excerpt, at pp. 77-80 of the above-referenced article:

In 1983, the SRCSD Board approved management goals consistent with the property's primary buffering function, including open space and wildlife conservation (Jones & Stokes 1982, 2000).....

In April 1990, the SRCSD adopted an Urban Forest Master Plan to maintain extensive open space, improve aesthetic values, "provide an abundance of high-quality wildlife habitat," and allow for limited public access consistent with habitat goals and public safety (Jones and Stokes 1989). The Upper Beach Lake Wildlife Enhancement Project, constructed between 1992 and 1996, was a major step toward reaching those goals. Much of the surveying and heavy equipment costs were offset through a unique partnership with the Sacramento County Job Corps, a vocational training program (S. Chainey, pers. comm.). Job Corps students learned surveying, carpentry, and heavy equipment operation, while improving the habitat values of their community. Additional funds came from the Packard Foundation, the Whitecap Foundation, and the California Environmental

³ http://www.cvbirds.org/CVBC_Bull/V.10no.4/V.10no.4pp77-89.pdf. Two pages are missing from the downloadable version. For reference, see Exhibit 1 to this letter.

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Protection Agency (Gleick et al. 1999). The Trail of Trees project was implemented in 1994 in partnership with the Sacramento Tree Foundation, with over 6,500 native trees planted along Franklin Boulevard and Sims Road. The Sacramento Tree Foundation has continued to support volunteer-based plantings each fall since 2003.

Also in 2003, SRCSD entered into a cost-sharing agreement with the U. S. Army Corps of Engineers for habitat enhancement on 105 hectares (265 acres). By the end of 2005, this ambitious project had resulted in planting over 10,000 trees and shrubs, and had established the native understory. The restored areas included 38 hectares (95 acres) of valley oak savanna, 37 hectares (92 acres) of perennial grassland, and smaller areas of aquatic habitat, riparian woodland, seasonal wetlands, and emergent marsh (SRWTP Bufferlands 2006).

An ongoing commitment to restoration, habitat management, and staffing to carry out these goals was signaled by the adoption of the Bufferlands Master Plan by the SRCSD Board of Directors (Jones and Stokes 2000). Prior to the restoration projects initiated in 1990, approximately 20 hectares (50 acres) of riparian forest existed in thin bands along Morrison and Laguna Creeks. To date, over 100 hectares (250 acres) of riparian forest and associated woodlands have been planted with 31,000 trees and shrubs, 45 hectares (115 acres) of grasslands have been seeded with native species, and over 120 hectares (300 acres) of wetlands are managed for waterfowl and other waterbirds (SRWTP Bufferlands 2006). SRCSD currently maintains a staff of 9 resource professionals responsible for managing and enhancing the Bufferlands' habitat values, and maintaining roads, fences and other infrastructure. The staff also assists with the environmental review and monitoring of SRWTP projects as well as many off-site projects occurring throughout the SRCSD coverage area, partners with SLNWR on shared management goals, assists other county and regional agencies, performs and manages weed abatement and landscaping for SRWTP and outlying facilities, monitors water quality in Laguna and Morrison Creeks, and leads public tours with assistance from volunteers.

Put simply, SRCSD would be violating CEQA, and the fundamental purposes for which significant federal, state, local, and private funds were obtained and spent, if it were to approve a wind power project that threatens to undermine or destroy the Bufferlands' primary and long standing dedication to wildlife habitat purposes and values.

- **The Bufferlands Serves as One of the Few, Remaining Regional “Safe” Places for Wildlife.** The Bufferlands was not created in a vacuum. The open space lands surrounding the Sacramento Regional Wastewater Treatment Plant were acquired and set aside at the time of the construction of the Plant to “buffer” them from the inexorable regional sprawl that these facilities were intentionally designed to encourage and facilitate. Having been, by its purposes and design, a significant catalyst for the destruction of wildlife habitat throughout

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the region its sewage treatment plant serves, SRCSD should not now consign the significant wildlife habitat that it has created, restored and enhanced at the Bufferlands to the same fate.

- **No Project Similar to the Current Proposal Has Ever Been Implemented at a Site With Similar, Dedicated Wildlife Habitat Purposes and Values.** The URS Report notes, at page 4, that “No wind turbine installations with comparable wetland habitat proximity were identified during this review.” If SRCSD sets itself up as the national “test case” for this sort of project against the best advice of the California Department of Fish and Game, the public, and its own staff and consultants, it will have to include in its financial calculus the significant, ongoing administrative, legal, and public relations nightmares associated with defending such an ill-advised decision. As explained in CDFG’s Guidance regarding the siting of wind energy projects: “If such a project moves forward despite indications that high levels of bird or bat fatalities might occur, operations avoidance and minimization options to reduce the impacts are limited, and the project may require costly, ongoing reassessment of impacts and adjustment of mitigation.”

In sum, SRCSD’s estimated nominal potential gain in energy cost savings from the Project is not worth the substantial, ongoing conflict, controversy and financial costs that the District will incur by staking out the Bufferlands as the “test case” for whether wind turbines and more than 25 years’ worth of commitment to wildlife habitat restoration, enhancement and creation can “coexist peacefully.”

The District has completed its preliminary investigation of wind turbine installation in the Bufferlands. That investigation, as reflected in the URS report and CDFG Guidelines, clearly reveals that the Bufferlands is an utterly inappropriate location for such proposals or facilities.

For the foregoing reasons, we request that the District not invest any further time or effort into this proposal, and instead direct staff to continue to research other clean energy options that do not threaten to undermine or destroy the significant and longstanding financial investments and public and private commitments to regional wildlife habitat enhancement and preservation that the Bufferlands represents.

Sincerely,



Keith G. Wagner, Conservation Chair

Sacramento Audubon Society

conservation@sacramentoaudubon.org

on behalf of the following entities and organizations:

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Don Schmoldt, President

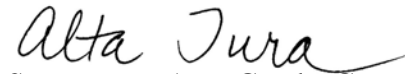
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Friends of the Swainson's Hawk

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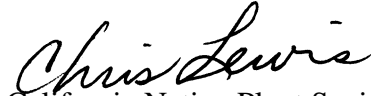
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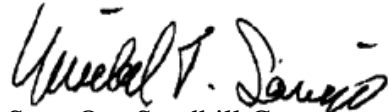


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Save the American River Association

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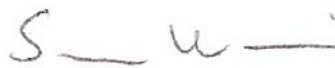
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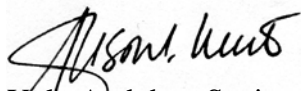
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Audubon California

Dan Taylor, Executive Director

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EXHIBIT 1

Habitat Restoration and Bird Responses at the Sacramento Regional County Sanitation District Bufferlands

Chris Conard, Sacramento Regional County Sanitation District, 8521 Laguna Station Road, Elk Grove, CA 95758

With a bird list of 226 species and growing, the Sacramento Regional County Sanitation District (SRCSD) Bufferlands is a bright spot for conservation in one of the Central Valley's most rapidly developing areas (Figures 1 and 2). When the Sacramento Regional Wastewater Treatment Plant (SRWTP) was constructed in 1978, in addition to 365 hectares (900 acres) of plant process area, 1,070 hectares (2,650 acres) were set aside to buffer the surrounding community from odors, noise, and industrial activities related to wastewater treatment, including the on-site storage of chlorine and sulfur dioxide (Jones & Stokes 1982, 2000). What has come to be known as the Bufferlands is now an island of open space between South Sacramento and Elk Grove, situated between Interstate 5 (I-5) and Franklin Boulevard, and to the north of Laguna Boulevard. An additional 65 hectares (160 acres) west of I-5, owned by the County Sanitation District I (CSD-1) and managed by Bufferlands staff, contains 10 hectares (25 acres) of climax Valley Oak (*Quercus lobata*) riparian forest and leased agricultural lands; Stone Lakes National Wildlife Refuge (SLNWR) is immediately to the southwest.

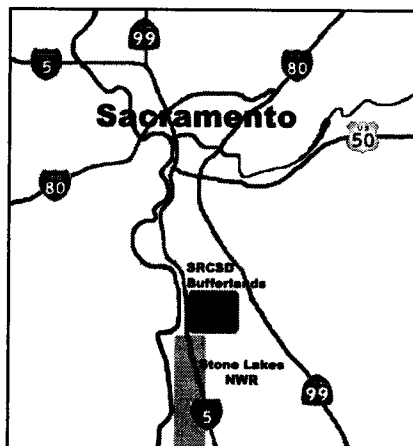
HISTORY OF HABITAT MANAGEMENT

In 1983, the SRCSD Board approved management goals consistent with the property's primary buffering function, including open space and wildlife conservation (Jones & Stokes 1982, 2000). As a large area of open space adjacent to Sacramento, there were the expected problems of trespassing and dumping, and a surprising amount of illegal shooting. Roy Nelson, the Bufferlands' first manager, saw past these problems and "was stunned by how beautiful it was and how much wildlife was out there." He, along with Robert Shanks, the SRCSD District Engineer, saw the need to develop a framework for managing the property. Without this early recognition and the dedication to see it through, the many habitat improvements described below may not have been initiated, and the development of the Bufferlands could have taken a very different course. Into the late 1980s, much of the area on the west side of the Bufferlands was leased to grow safflower, sugar beets, and hay. Proposals had been presented to SRCSD to use the Bufferlands as a massive eucalyptus plantation for paper pulp production, as well as uses incompatible with the buffering function, such as an equestrian center, sports fields, and golf courses.



Figure 1 (above). Aerial view of the Sacramento Regional County Sanitation District Bufferlands. Numbered habitat areas include: 1a) Upper Beach Lake Wetlands, lower cell, 1b) Upper Beach Lake Wetlands, upper cell, 2) Constructed Wetlands, 3) Lost Lake, 4) Fishhead Lake, 5) Nicolaus Pond, 6) Black Crown Lake, 7) Meadowlark Lake.

Figure 2 (right). Location of the Sacramento Regional County Sanitation District Bufferlands within the Sacramento area.



These proposals led to development of an updated management plan, with a supporting resource evaluation (Jones & Stokes, 1989). In 1987, beavers (*Castor canadensis*) dammed Morrison Creek, preventing the pumping down of water in time to allow for agricultural use. A dense patch of smartweed (*Polygonum* sp.) quickly established and the area supported nesting Northern Harriers (*Circus cyaneus*), and, in the fall, a large flock of Canvasbacks (*Aythya valisineria*) and other waterbirds (D. Airola, pers. comm.). These and other observations led to the recognition of the potential for habitat restoration and enhancement (D. Airola, pers. comm., Jones & Stokes 1991).

In April 1990, the SRCSD adopted an Urban Forest Master Plan to maintain extensive open space, improve aesthetic values, "provide an abundance of high-quality wildlife habitat," and allow for limited public access consistent with habitat goals and public safety (Jones and Stokes 1989). The Upper Beach Lake Wildlife Enhancement Project, constructed between 1992 and 1996, was a major step toward reaching those goals. Much of the surveying and heavy equipment costs were offset through a unique partnership with the Sacramento County Job Corps, a vocational training program (S. Chainey, pers. comm.). Job Corps students learned surveying, carpentry, and heavy equipment operation, while improving the habitat values of their community. Additional funds came from the Packard Foundation, the Whitecap Foundation, and the California Environmental Protection Agency (Gleick et al. 1999). The Trail of Trees project was implemented in 1994 in partnership with the Sacramento Tree Foundation, with over 6,500 native trees planted along Franklin Boulevard and Sims Road. The Sacramento Tree Foundation has continued to support volunteer-based plantings each fall since 2003.

Also in 2003, SRCSD entered into a cost-sharing agreement with the U. S. Army Corps of Engineers for habitat enhancement on 105 hectares (265 acres). By the end of 2005, this ambitious project had resulted in planting over 10,000 trees and shrubs, and had established the native understory. The restored areas included 38 hectares (95 acres) of valley oak savanna, 37 hectares (92 acres) of perennial grassland, and smaller areas of aquatic habitat, riparian woodland, seasonal wetlands, and emergent marsh (SRWTP Bufferlands 2006).

An ongoing commitment to restoration, habitat management, and staffing to carry out these goals was signaled by the adoption of the Bufferlands Master Plan by the SRCSD Board of Directors (Jones and Stokes 2000). Prior to the restoration projects initiated in 1990, approximately 20 hectares (50 acres) of riparian forest existed in thin bands along Morrison and Laguna Creeks. To date, over 100 hectares (250 acres) of riparian forest and associated woodlands have been planted with 31,000 trees and shrubs, 45 hectares (115 acres) of grasslands have been seeded with native species, and over 120 hectares (300 acres) of wetlands are managed for waterfowl and other waterbirds (SRWTP Bufferlands 2006). SRCSD currently maintains a staff of 9 resource professionals responsible for managing and enhancing the Bufferlands' habitat values, and

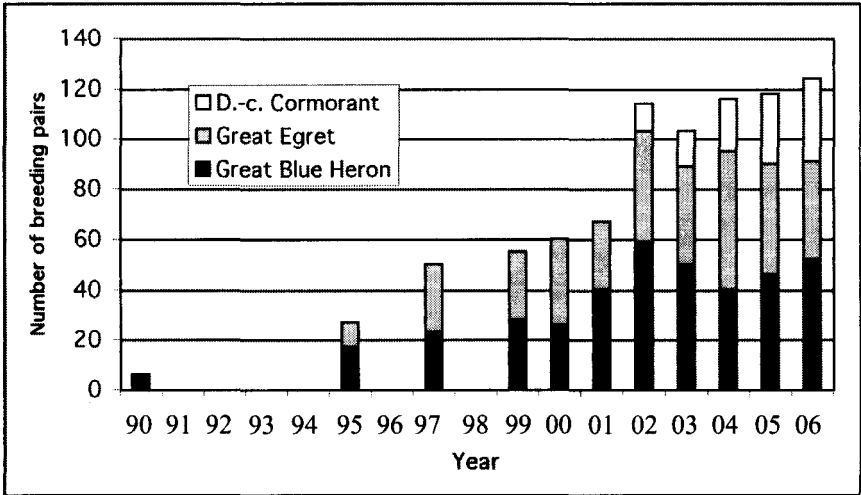
maintaining roads, fences and other infrastructure. The staff also assists with the environmental review and monitoring of SRWTP projects as well as many off-site projects occurring throughout the SRCSD coverage area, partners with SLNWR on shared management goals, assists other county and regional agencies, performs and manages weed abatement and landscaping for SRWTP and outlying facilities, monitors water quality in Laguna and Morrison Creeks, and leads public tours with assistance from volunteers.

The variety of habitats at the Bufferlands supports a high diversity of birds. For example, on the Bufferlands portion (Area 1) of the Rio Cosumnes Christmas Bird Count (CBC) and on “big day” tours conducted in late April, one-day totals of over 110 species have been recorded. Roughly speaking, there is a lower elevation (near sea-level) wet side on the west in the Morrison Creek flood plain, and a drier side with open grassland on the higher elevation (5-6 m [15-20 ft]) eastern portion of the property. In addition to Morrison and Laguna Creeks, there is year-round open water in two borrow pits (Meadowlark and Black Crown Lakes—7.5 hectares (19 acres) and 11 hectares (28 acres) respectively) created during construction of I-5, a shallow 5-hectare (12-acre) agricultural pond constructed in 1971 and now managed for waterbird habitat (Nicolaus Pond), and an abandoned gravel mine (Lost Lake) with 5 hectares (12 acres) of open water. Fishhead Lake was created in the early 1980s to mitigate for wetlands impacted by the expansion of the treatment plant. It contains 8 hectares (20 acres) of permanent open water and 12 hectares (30 acres) of managed seasonal wetlands. Between Fishhead Lake and Laguna Creek are another 7 hectares (17 acres) of seasonal wetlands created to mitigate for the 1988 flood control modifications to Laguna Creek by the City of Sacramento (Jones & Stokes 1989). The 9-hectare (22-acre) Constructed Wetlands, designed to study the feasibility of using on-site wetlands to treat wastewater, provides excellent habitat for rails and other marsh birds; this is the only place on the Bufferlands where wastewater has been used in the wetlands. It is also the site of Sacramento County’s first recorded Least Bittern (*Ixobrychus exilis*), 1 May 1996, and Great-tailed Grackle (*Quiscalus mexicanus*), 25 March 1996. Nearly 405 hectares (1,000 acres) are under agricultural leases (primarily hay crops and grazed pasture on the east side of the property), which are managed with wildlife-friendly farming practices (SRWTP Bufferlands 2006).

MANAGEMENT AND MONITORING PROGRAMS

Water control structures on the 65 hectares (160 acres) of seasonal wetlands within the Upper Beach Lake Wildlife Area allow for water management to optimize foraging for waterfowl, shorebirds, and colonially-breeding waterbirds. High counts of over 15,000 Canvasbacks, 2,000 Ring-necked Ducks (*Aythya collaris*), and 1,000 Lesser Scaup (*Aythya affinis*) have been recorded. The managed seasonal wetlands at Fishhead Lake and the

Figure 3. Nesting pairs of Great Blue Heron, Great Egret, and Double-crested Cormorant at the Sacramento Regional County Sanitation District Bufferlands, 1990-2006. Surveys were not conducted in 1991-94, 1996 and 1998.



shallower portions of the Upper Beach Lake wetlands provide excellent winter habitat for large numbers of dabbling ducks, with Mallards (*Anas platyrhynchos*), Northern Shoveler (*Anas clypeata*), Northern Pintail (*Anas acuta*) and Green-winged Teal (*Anas crecca*) the most common. More than 50 nest boxes augment naturally occurring cavities for breeding Wood Ducks (*Aix sponsa*). Gadwall (*Anas strepera*), Mallards, and Cinnamon Teal (*Anas cyanoptera*) also breed at the Bufferlands, along with a semi-wild population of Canada Geese (*Branta canadensis*)—a species that did not historically breed in the Central Valley.

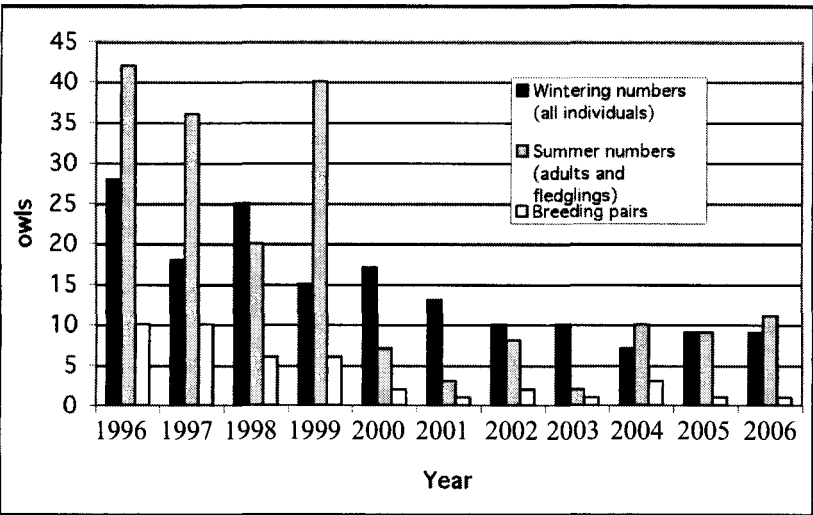
Water is drawn down in spring in Upper Beach Lake to grow seed-producing vegetation for the following year’s waterfowl. Drawdown also is timed to coincide with shorebird migration. Single-day counts of over 2,000 for both Western Sandpipers (*Calidris mauri*) and Long-billed Dowitchers (*Limnodromus scolopaceus*) are typical. A Great Blue Heron (*Ardea herodias*), Great Egret (*Ardea alba*), and Double-crested Cormorant (*Phalacrocorax auritus*) rookery has expanded since the construction of the Upper Beach Lake wetlands. Heron and egret nests have increased from five or six in 1990 before the project (D. Airola pers. comm.), to 27 nests in 1995, to over 100 each year since 2002 (Figure 3). This increase is certainly a response to the restored wetland habitat on the Bufferlands, as well as to additional restored wetlands on the adjacent SLNWR. These species benefit from the concentration of prey as water levels drop in the spring when they are feeding young. Oddly, a rookery of Black-crowned Night-Herons (*Nycticorax nycticorax*) that was known to occur as early as 1986 and reported as 30 nesting pairs in 1988 (Sacramento County Breeding Birds Atlas, unpub. data) had disappeared by the early 1990s

(R. Jones, pers. comm.). This species is still recorded year-round on the property, and is known to nest in nearby residential areas.

The Bufferlands staff has cultivated good working relationships with regulatory agencies to ensure the protection of special-status species and other wildlife. Three or four Swainson's Hawk (*Buteo swainsoni*) nests are typically recorded each year. The nests of this state-threatened species are carefully monitored to document nest success and to ensure that treatment plant operations and projects crossing the Bufferlands do not disturb nesting birds. The Bufferlands is also home to Burrowing Owls (*Athene cunicularia*). Despite continued efforts to enhance habitat for this species, including artificial burrow construction and vegetation management, numbers have declined at an alarming rate (Figure 4). The decline of the Bufferlands population coincides with the loss of habitat to development in South Sacramento and Elk Grove, and is consistent with a region-wide decline of this species. There is an influx of Burrowing Owls in the fall, but most disperse prior to breeding season. Additional study is needed to determine where these wintering owls are breeding.

Over 20 years of data on bird populations exist for the Bufferlands, beginning with surveys for special-status species, waterfowl, wading birds, raptors, and shorebirds conducted during the late 1980s and early 1990s for the preparation of planning documents (Jones & Stokes 1991, D. Airola, unpub. data). Breeding species were identified as a part of the Sacramento County Breeding Bird Atlas effort from 1987-92. Since the early 1990s, the Bufferlands staff has monitored the rookery and all recorded raptor nests,

Figure 4. Breeding pairs and total numbers of wintering and summering Burrowing Owl at the Sacramento Regional County Sanitation District Bufferlands, 1996-2006.



performed weekly waterfowl counts from late fall to early spring, and has surveyed the Bufferlands for the Rio Cosumnes CBC since it began in 1995. Jesse Grantham, National Audubon Society, performed bird surveys at Upper Beach Lake from 1994-95, and additional observations incidental to management activities have added to the growing database. A 1996 study documented bird usage of the Constructed Wetlands, and showed that it compared favorably to a reference wetland site (Jones et al. 1998).

Intensive songbird monitoring efforts began with the banding program initiated by Kris Stevens as part of the Effie Yeaw Nature Center's Wildlife Watch Program. A banding station was set up near Meadowlark Lake and operated under Tim Manolis' master banding permit from November 1990 through December 1993. During 29 sessions, 393 birds were banded out of the 445 that were mist-netted. Additional observations were recorded, adding many firsts to the Bufferlands bird list, including a Dusky Flycatcher (*Empidonax oberholseri*) on 3 May 1992 (T. Manolis, pers. comm.). Stan Wright of the Sacramento-Yolo Mosquito and Vector Control District conducted additional banding from September 1996 through October 1999 in addition to taking blood samples from selected species to monitor mosquito-borne diseases. During 28 visits, 432 birds were banded (S. Wright, pers. comm.). Since 2003, a point count route through a portion of the property's restored and remnant riparian forest has tracked breeding landbird populations. Some of the points were set prior to new restoration plantings so that bird response to the maturing sites can be shown. Other points show breeding activity by species such as Nuttall's Woodpecker (*Picoides nuttallii*), House Wren (*Troglodytes aedon*), Common Yellowthroat (*Geothlypis trichas*), Spotted Towhee (*Pipilo maculatus*), Song Sparrow (*Melospiza melodia*), and Black-headed Grosbeak (*Pheucticus melanocephalus*) at riparian sites planted in 1992. Additional species have been documented on public birding tours and volunteer surveys.

NOTES ON SELECTED SPECIES

From December through March, up to 600 Canada Geese may be present, and though Greater White-fronted Geese (*Anser albifrons*), Snow Geese (*Chen caerulescens*), and Ross's Geese (*Chen rossii*) are often seen flying over the Bufferlands, they are recorded infrequently on the ground. Surprisingly, there are only three separate records of Eurasian Wigeon (*Anas penelope*). American Wigeon (*Anas americana*) are usually present in far lower numbers (average during CBC of 22) than at the Cosumnes River Preserve 16 km to the south, where Eurasian Wigeon are found annually—typically among American Wigeon flocks (C. Conard pers. obs., J. Trochet, pers. comm.). Blue-winged Teal (*Anas discors*) occur annually in very low numbers from late winter through spring. Redheads (*Aythya americana*) and Greater Scaup (*Aythya marila*) are nearly annual among the thousands of diving ducks, as are Hooded Mergansers

(*Lophodytes cucullatus*). Barrow's Goldeneyes (*Bucephala islandica*) have been recorded on only three occasions. Wild Turkeys (*Meleagris gallopavo*) were first detected in 2001 and are now breeding. Horned Grebes (*Podiceps auritus*) are not typically recorded except in very wet years when the Upper Beach Lake basin is filled with several feet of water. Western Grebes (*Aechmophorus occidentalis*) and Clark's Grebes (*Aechmophorus clarkii*) can turn up on the permanent water bodies at any season.

Prairie Falcons (*Falco mexicanus*) are regular with one or two birds present (often observed daily) each winter. Ferruginous Hawks (*Buteo regalis*), Golden Eagles (*Aquila chrysaetos*), Merlin (*Falco columbarius*) and Peregrine Falcons (*Falco peregrinus*) are sporadic, while there are only a handful of Rough-legged Hawk (*Buteo lagopus*) records and Bald Eagle (*Haliaeetus leucocephalus*) has been recorded only once (G. Ewing, pers. comm.).

Sandhill Cranes (*Grus canadensis*) occasionally forage on the property, mostly as strays from the wintering population at SLNWR, which are predominantly Greater Sandhill Cranes (*G.c. tabida*). The seasonal wetlands provide excellent spring shorebird habitat as water levels fall. The sewage ponds at SRWTP can also provide good shorebird habitat in the summer and fall, and, in winter, the roads around the treatment ponds are used by loafing Black-bellied Plovers (*Phivialis squatarola*) and Dunlin (*Calidris alpina*). Flocks of 500 birds are regular, with occasional highs of over 1,000 of each species. Despite the Black-bellied Plover numbers, only one Pacific Golden-Plover (*Phivialis fulva*) has been recorded (10 December 2003). Additional records of note include Snowy Plover (*Charadrius alexandrinus*), 11 August 2004; Solitary Sandpiper (*Tringa solitaria*), nearly annual; Willet (*Tringa semipalmata*), seven records; Marbled Godwit (*Limosa fedoa*), two records; Semipalmated Sandpiper (*Calidris pusilla*), five records—an increased July-August survey effort since 2004 shows that this species is probably annual; Baird's Sandpiper (*Calidris bairdii*), annual; Pectoral Sandpiper (*Calidris melanotos*), nearly annual; and Short-billed Dowitcher (*Limnodromus griseus*), annual in low numbers.

Long-billed Curlews (*Numenius americanus*) are regularly seen as flyovers from late fall to early spring. They occasionally use the seasonal wetlands during the spring draw-down, but are more commonly encountered in the grasslands—often only one or two. When higher numbers are seen, they are typically foraging in the agricultural fields to the northwest of the property (which are slated for development). Gulls are often fairly numerous, with 200 to 300 regularly recorded in winter. More than 95% of the gulls are adults or near-adults; similar to what has been noted at Cosumnes River Preserve (J. Trochet, pers. comm.). California Gulls (*Larus californicus*) are the most common, with moderate numbers of Ring-billed Gulls (*Larus delawarensis*) and fewer Herring Gulls (*Larus argentatus*). The Bufferlands and adjacent wastewater ponds are one of the most reliable sites in the Central Valley for

Mew Gulls (*Larus canus*), with impressive totals of up to 12 individuals. Bonaparte's Gulls (*Larus philadelphia*) are irregular and are absent many years. There is only one record each for Thayer's Gull (*Larus thayeri*) and Glaucous-winged Gull (*Larus glaucescens*), and there are three spring records of Black Terns (*Chlidonias niger*).

The only Long-eared Owl (*Asio otus*) recorded on the property was found on 29 October 2007. Short-eared Owls (*Asio flammeus*) are nearly annual, but recorded sporadically in late fall through early spring.

Songbird highlights include nearly annual migrant Olive-sided Flycatchers (*Contopus cooperi*), and nearly annual spring records of Hammond's Flycatchers (*Empidonax hammondii*), with fewer in the fall. Dusky Flycatchers have been detected less frequently. Loggerhead Shrikes (*Lanius ludovicianus*) persist in excellent numbers—with winter counts of more than 20 individuals—and nests are found each year. Hutton's Vireos (*Vireo huttoni*) are recorded in the winter, but apparently do not breed on the property. This may be due in part to the abundant Brown-headed Cowbirds (*Molothrus aeneus*) plaguing these and other open-cup nesters. Violet-green Swallows (*Tachycineta thalassina*) are nearly annual in fall, but are irregular (occasionally abundant) in early spring. Bank Swallows (*Riparia riparia*) are nearly annual as post-breeding migrants. Rock Wrens (*Salpinctes obsoletus*) are rare but regular winter visitors to piles of rocks and rip-rap, old equipment, and even hay stacks. Winter Wrens (*Troglodytes troglodytes*) are uncommon but annual winter residents in the mature oak forests. Neither Western Bluebirds (*Sialia mexicana*) nor Mountain Bluebirds (*Sialia currucoides*) are regular, but there are, somewhat surprisingly, more records of Mountain Bluebirds. Wrentits (*Chamaea fasciata*) are regular in low numbers in the mature riparian forest.

Migrating warblers are found in good numbers in patches of valley oak riparian forest and the willow-dominated (*Salix* sp.) riparian corridors, as well as maturing restoration sites. Yellow-breasted Chats (*Icteria virens*) have been found on only three occasions. Spotted Towhees are widespread throughout riparian and scrubby areas, but California Towhees (*Pipilo crissalis*) are found in very low numbers, apparently restricted to levees and other sites artificially set out of the flood plain. Among sparrow records, Chipping Sparrows (*Spizella passerina*) are nearly annual in spring and early fall migration; there are two records of Vesper Sparrow (*Pooecetes gramineus*), and only four of Lark Sparrow (*Chondestes grammacus*), a species regular a few kilometers to the east and west. There are two solid records of Red Fox Sparrow (presumably *Passerella iliaca zaboria*), with several other candidates noted, and White-throated Sparrows (*Zonotrichia albicollis*) are annual. Blue Grosbeaks (*Passerina caerulea*) are regular breeders, with five to eight males on territory each year. Lazuli Bunting (*Passerina amoena*) numbers vary annually as breeders, from several to absent, though they are typically abundant in fall migration during

August and September. Tricolored Blackbirds (*Agelaius tricolor*) are regular flyovers in summer, but do not breed on the property. Yellow-headed Blackbirds (*Xanthocephalus xanthocephalus*) are irregular in spring and summer, but have been encountered less frequently in recent years, and there is no recent evidence of nesting. Great-tailed Grackles are regular breeders, but are often absent from late summer through winter. There are several records of Hooded Orioles (*Icterus cucullatus*), mostly in late summer.

RARITIES

An American Golden-Plover (*Pluvialis dominica*) was present within a Black-bellied Plover flock from 6 November to 17 November 2006 (the 17 November record was from SLNWR; the last SRWTP sighting was 15 November). A flock of 9 Ruddy Turnstones (*Arenaria interpres*) was found on 7 May 2000 and there have been three Sanderling (*Calidris alba*) records (two in spring, one in fall). A Ruff (*Philomachus pugnax*), likely a female, was present on Upper Beach Lake from 30 April to 9 May 2001.

Songbird rarities include a kingbird reported on the 21 December 1995 Rio Cosumnes CBC. It was observed the following day and reported as a Tropical/Couch's Kingbird (*Tyrannus melancholicus*/ *T. couchii*). It was likely a Tropical Kingbird, but it was not identified to species since it was not heard calling (A. Engilis, pers. comm.). Sage Thrashers (*Oreoscoptes montanus*) have been recorded on two occasions. The handful of rare warblers found include a singing male Northern Parula (*Parula americana*) present from 23-24 May 2004 and a singing male Blackburnian Warbler (*Dendroica fusca*) found on 13 June 2005. A fall female Canada Warbler (*Wilsonia canadensis*) was found on 8 September 2000. Other rarities have included a Green-tailed Towhee (*Pipilo chlorurus*), 17 September 2007, a Brewer's Sparrow (*Spizella breweri*), 12 September 2003, and a singing male Indigo Bunting (*Passerina cyanea*), 10 July to 23 August 2006.

Sacramento County's second Brown Pelican (*Pelecanus occidentalis*) came within a few meters of making the Bufferlands bird list during its stay at SLNWR from 19 July to 14 October 2004 (Conard 2004).

DISCUSSION

The Bufferlands project is not without major challenges. Urban development has extended to its boundaries, resulting in a loss of habitat continuity to the north, south, and east. With residential and commercial development of additional agricultural lands northwest of the Bufferlands already planned, the occurrence of wintering raptors such as Ferruginous Hawk and Golden Eagle, and the foraging habitat of Swainson's Hawks and Long-billed Curlews will be reduced. Non-native invasive weeds reduce habitat

quality in wetlands, grasslands, and riparian forest, and weed management will be a major focus for years to come. A largely unchecked beaver population, resulting from altered hydrology, urban runoff, and a lack of predators, has disproportional impacts on the forests and greatly reduces the recruitment of young trees—especially Fremont Cottonwoods (*Populus fremontii*). Urban runoff from summer watering has turned seasonal streams into perennial streams, allowing a now year-round beaver population greater access to the riparian forests. Levees prevent the natural flow of Morrison Creek, which now enters the Sacramento River through a large pump station. The streams are further altered by upstream channelization and a largely non-native fish fauna. Water quality is often poor and the impacts to aquatic invertebrates and other foundational components of the aquatic ecosystem cannot be good, but are largely unexplored. Since West Nile virus arrived in our area, there has been increased pressure to drain wetlands earlier in the season to avoid producing mosquitoes. This reduces the amount of time the wetlands can hold water and the ability of staff to effectively manage and irrigate wetland vegetation. Despite these challenges, the substantial benefits of the Bufferlands to birds and other wildlife are evident in the number and variety of species and individuals recorded.

Bufferlands staff members, most of whom have been with the project for more than ten years, have had the all-too-rare opportunity to gain long-term knowledge of a property and fine-tune techniques to improve habitat quality. Early tree plantings have been revisited to add native grass and sedge understory plants. Restoration has come a long way since the first wetlands mitigation project, Fishhead Lake, was completed on the property in the early 1980s, when non-native pines (*Pinus* sp.) were planted—though these have attracted Red-breasted Sapsuckers (*Sphyrapicus ruber*), and roosting Barn Owls (*Tyto alba*) and Great Horned Owls (*Bubo virginianus*). The staffing level needed to properly manage these wetlands was not in place until the early 1990s; however, the wide array of restoration and enhancement projects and the obvious benefits to wildlife were made possible by the long-range planning and foresight that led to setting aside the Bufferlands long before it was actively managed. In a region with heavy development pressure, it also took the vision to pursue habitat improvement, open space protection, and goals compatible with SRWTP's primary wastewater treatment function, as opposed to more intrusive proposals.

BIRDING OPPORTUNITIES

Public access to the Bufferlands is restricted to guided tours. A growing list of public events is scheduled to view the property's avian highlights, including waterfowl, the rookery, and spring and fall migration. Bird-related tours are published in the Sacramento Audubon Society's Observer and on their Web

site (sacramentoaudubon.org). Information on tours and additional background information, including a bird list and a SRWTP Bufferlands Annual Report, can be found at the Bufferlands Web site (bufferlands.com).

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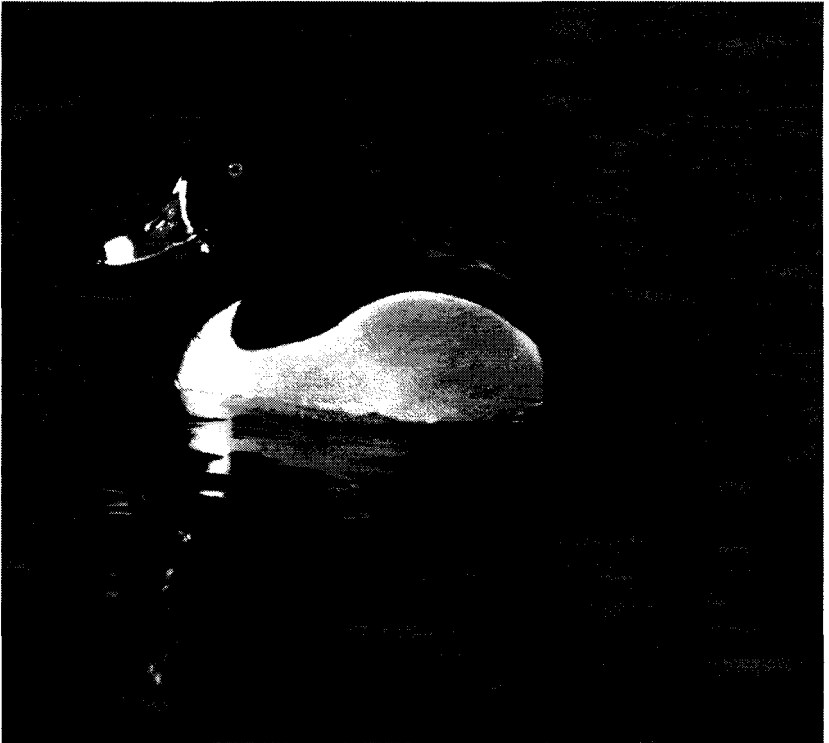
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Male Ring-necked Duck (*Aythya collaris*) at the Sacramento County Regional Sanitation District Bufferlands.

Photo by Chris Conard