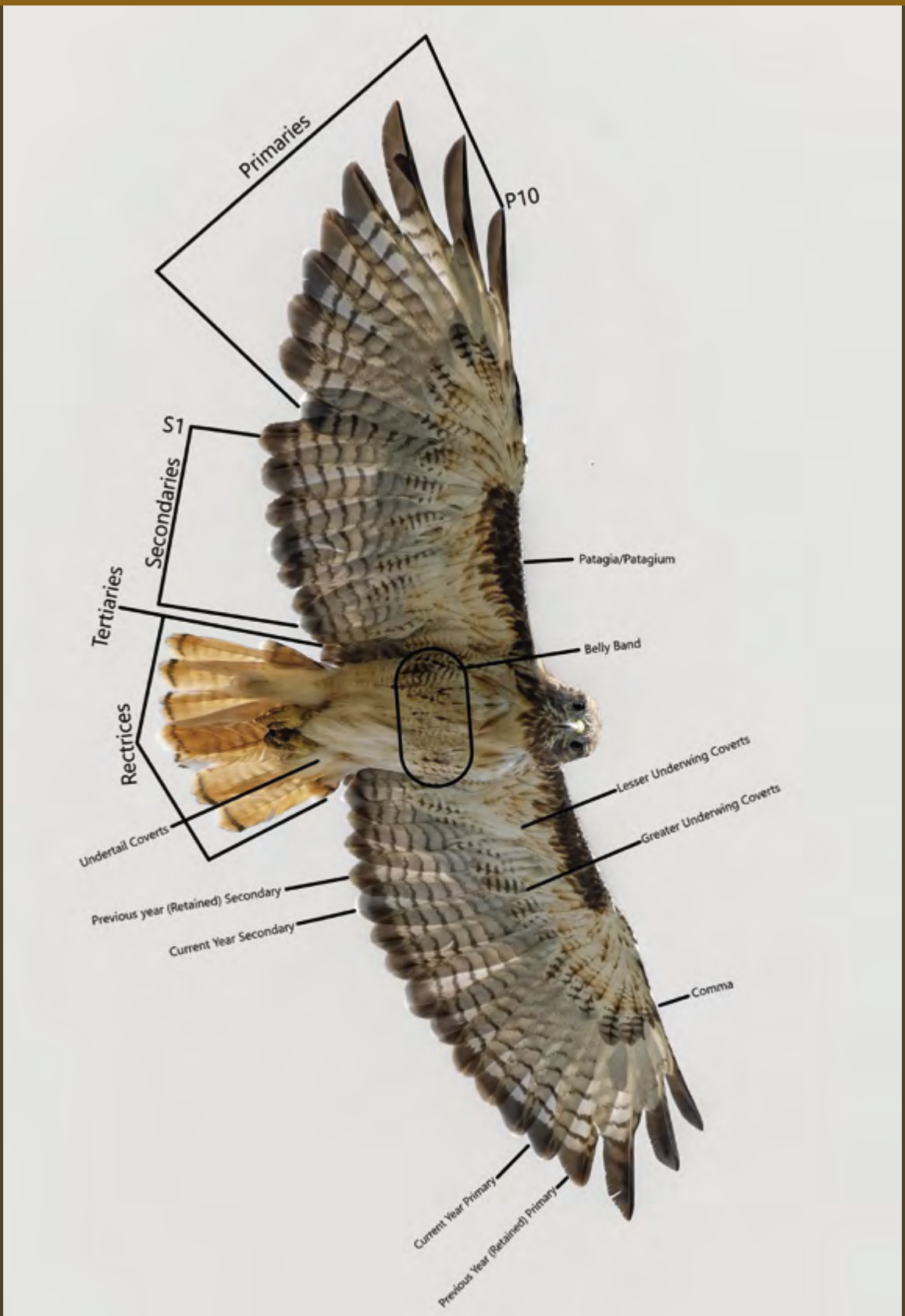
MARICOPA AUDUBON SOCIETY

The Cactus Wren·dition

VOLUME LXIX NO. 1 SUMMER – 2023



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A note about the volume number:
This issue corrects the volume number which has been inconsistently applied over the years. June 2023 is the 69th anniversary of this publication, originally titled "The Roadrunner".

LETTER FROM THE EDITOR

Laurie Nessel

This issue comes out on the 70th Anniversary of Maricopa Audubon Society. A reprint from the archives is a feature article by our conservation chair in 1971 calling for a fight to stop Orme Dam. There is an update from Conservation Chair Charles Babbitt on the fight against the destruction caused by feral horses and trespass cattle in several areas around the state, as well as the latest news on Oak Flat.

We have a nice selection of field trips for those willing to bear the heat to see special summer sightings.

Our Poet Laureate David Chorlton bestows another provocative poem upon us, stunningly illustrated by multi-talented, long-time Cactus Wrendition contributor Jim Burns.

On page 9, Tom Gatz delves into the Smithsonian archives for some fascinating ornithological history in this second-in-a-series on eponymous bird names. On page 11, Janet Witzeman describes the serendipitous addition of a species new to Maricopa County. For the insatiably curious, Matt van Wallene presents a scholarly article on feathers, illustrated with his images, including microscopic details.

We introduce young raptor photographer Kyler Noe, and learn about the "forever chemicals" - PFAS - from our Secretary, Jelena Grbic. ASU Professor Ken Sweat researches the biological diversity of the restored Rio Salado in "The Value of Water", and the inimitable Garmezy's round out this issue with their phenomenal, nature inspired glass art.

I hope you enjoy this issue!

PROGRAMS

Meetings start back up in September. Have a great summer!

On the Cover

Red-tailed Hawk, graphic by Kyler Noe.

Retained or current feathers? Examining feathers can help determine a bird's age, among other attributes. Young birds have an even, tidy feather profile. Adults may show ragged feathers, and their staggered molt creates gaps. The current year feathers in this Red-tailed Hawk appear grayish, while the retained remiges have acquired more brown. Compare the ragged edge of the tail feathers with the smooth, new outer rectrices. Analyzing molt can be a challenging addition to your bird identification skills.

Did you know that the unusual molt sequence of falcons and parrots are the same, and that DNA analysis shows they have a common ancestor, and that the similarity between falcons and hawks is due to convergent evolution?

ANNOUNCEMENTS

Give Dead Birds a Purpose

Longtime MAS member and contributor to this newsletter, Matt van Wallene, is collecting bird specimens for a feather study. If you've ever read any of Matt's articles, you know his intense curiosity about all things birds. Matt has a state-issued Scientific Activity License to transport and possess dead birds. If you come across a dead bird in your yard or place of business (window strikes) or are a hunter, please contact Matt (480) 204-1104, zoutedrop@gmail.com.

BIRDING CLASSES

MAS is pleased to participate in the 2023 Maricopa County Reads, a summer reading program provided by the Maricopa County Library District to all county public libraries. MAS is offering two programs - Birds of Prey and Birds of Phoenix and Maricopa County. To attend, please register directly with the library that offers the desired program. Space is limited so act fast! Expect to leave with newfound knowledge and perhaps a raffle prize or two. https://maricopacountyreads.org/

DAY	DATE	TIME	PROGRAM	LOCATION
Saturday	6/17	11-1	Birds of Prey	Chandler Sunset
Sunday	6/18	1-3	Birds of Prey	Anthem North Valley
Tuesday	6/20	2-3:15	Birds of Phoenix and Maricopa County	Sun City
Saturday	6/24	10-11:15	Birds of Phoenix and Maricopa County	Mesa Red Mountain
Saturday	6/24	2-4	Birds of Prey	Phoenix Desert Broom
Saturday	7/29	2-3:15	Birds of Phoenix and Maricopa County	Glendale Heroes

MAS IN ARIZONA HIGHWAYS

MAS is featured in the June 2023 issue of Arizona Highways for our 70 years of appreciation and conservation of the natural world. Thank you, Arizona Highways for your recognition of us.

NEWSFLASH

All annual MAS Friends memberships now begins or renews on April 1 of each year, and will be prorated.

COMMITTEES/SUPPORT

Bookstore	Sochetra Ly
Poet Laureate	David Chorlton
Associate Editors	Mark Larson
	Vicki Hire

www.maricopaaudubon.org

"Despite the abundant scientific evidence demonstrating livestock grazing is fundamentally incompatible with the protection of riparian areas in the arid Southwest, the Bureau [of Land Management] has newly authorized grazing on four livestock allotments, essentially sacrificing the irreplaceable values of the [San Pedro National] Conservation Area for the benefit of four small ranches."

-Western Watersheds Project, 11 April 2023

An Investment in the Future

Bequests are an important source of support for the Maricopa Audubon Society. Your chapter has dedicated itself to the protection of the natural world through public education and advocacy for the wiser use and preservation of our land, water, air and other irreplaceable natural resources.

You can invest in the future of our natural world by making a bequest in your will to the Maricopa Audubon Society. Talk to your attorney for more information on how this can be accomplished.

Support Maricopa Audubon as part of **Fry's Community Rewards Program**. Register your Fry's VIP card and select Maricopa Audubon #WW583 as your non-profit organization at no cost to you. Please visit Fry's Community Rewards online or visit your local Fry's to register.

Sign up for the e-newsletter!

To subscribe, email: Maricopaaudubonsociety@gmail.com

Note: We do not use the email list for anything other than the described purpose.

CONSERVATION UPDATE by Charles Babbitt

SALT RIVER HORSES

The Salt River Recreation Area east of Phoenix is being overrun by feral horses. The Tonto National Forest estimates that there are more than 500 feral horses in the area, most originating from nearby tribal lands.

These non-native horses are causing well-documented destruction of riparian habitat along the river. They are trampling river banks and vegetation, denuding soils, fouling water and eating young cottonwood and willow shoots, preventing vital tree recruitment.

Tonto National Forest denuded by feral horses. August 2022.

Due to overgrazing, drought and lack of natural forage, horse advocates now routinely artificially feed the Salt River horses they describe as "wild" to prevent mass starvation. These so called "wild" horses have become so tame they group up and follow pickup trucks bringing them hay at several overgrazed, barren feed lots.

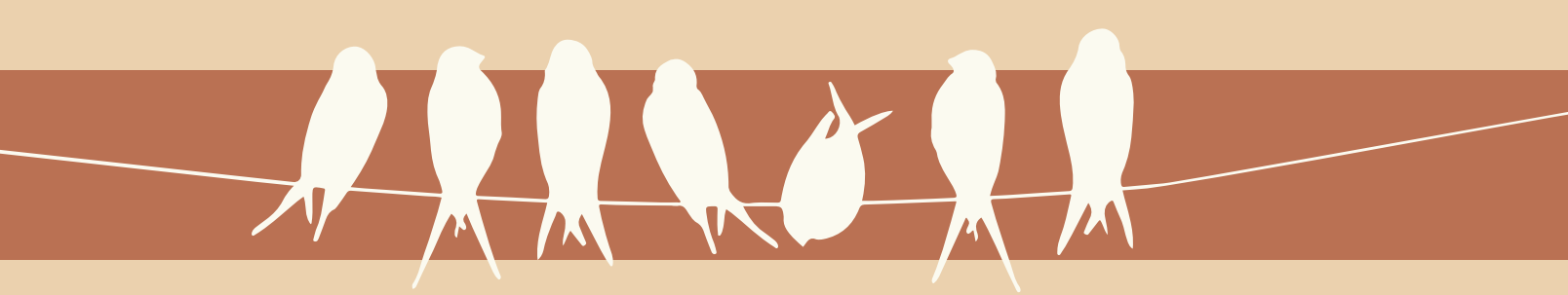
This sorry state of affairs is a result of a 2017 intergovernmental agreement between the Forest Service and the State of Arizona. Governor Ducey, caving in to pressure from vocal horse advocates, directed the state to assume ownership of the horses thereby preventing them from being designated unauthorized livestock and removed. When the horses damage nearby private property, however, the state denies ownership.

Riparian habitat like that along the Salt River is increasingly rare. It is considered one of the most biologically diverse in the United States (see p. 17). The Forest Service itself has acknowledged that protection and enhancement of these riparian and aquatic areas is paramount in providing habitat and sustainable water for dependent fish, wildlife, and plant species. In Arizona, over 300 nesting bird species can be found in Sonoran Desert riparian areas along with threatened and endangered plants, mammals and reptiles.

Scientists from the Forest Service, the University of Arizona and the USDA Rocky Mountain Research Station have concluded the area can support only between 20-48 horses per year. There are currently over 10 times that number struggling to survive and this will only get worse with advocates blocking their removal.

The current horse management plan relies purely on contraception to control the population. The administration of contraception, however, will not allow for control to a reasonable population level for at least 25 to 30 years.

What is clear is that there currently is no reasonable or effective management plan in place to address the multiple problems being caused by the large feral horse population. Maricopa Audubon Society (MAS) is presently talking to the Forest Service and the State about a long term resolution. If no agreement can be reached, MAS, along with other interested and affected parties, may file a lawsuit in federal court that, hopefully, will result in a new management plan based on science not emotion. What is needed and what the public should demand, is a scientifically defensible plan that will reduce and control herd size and allow recovery of this important riparian area.



HORSE AND COW REMOVAL

Trespassing horses and cattle moving into riparian areas is a major problem statewide. Recently, there has been some limited success in getting federal land managers to remove some of them.

In February, the Forest Service authorized and implemented the aerial shooting of feral cattle in remote areas of **New Mexico's Gila Wilderness**. In a press release prior to their removal the Forest Service acknowledged the damage the cattle were doing in riparian areas. The operation succeeded in removing 18 feral cows.

Last fall approximately 215 horses were removed by the Forest Service from the **Apache Sitgreaves National Forest** which has been overrun by feral horses. Their removal came about as a result of an earlier court settlement, to which MAS was a party, that implemented policies and procedures to protect and conserve critical riparian habitat of the New Mexico Meadow Jumping Mouse. Current estimates put the feral horse population on the Apache Sitgreaves at 1500. The 215 horses that were removed is just keeping up with their reproductive rate.

> One single cow could wipe out the Huachuca water umbel. *Cyndi Tuell, Western Watersheds Project*

The **San Pedro Riparian National Conservation Area** (SPRNCA) continues to be invaded by trespassing cattle. Since the court settlement in August 2022, to which MAS was also a party, there have been 122 (and counting) documented and reported instances of trespassing cattle in critical habitat of several threatened and endangered species including the Huachuca Water Umbel, Western Yellow-billed Cuckoo and Northern Mexican Garter Snake. MAS, along with other organizations, have filed a formal protest of the Bureau of Land Management's (BLM) recent decision to allow grazing on four allotments partially located within SPRNCA. MAS has also filed a supplemental notice of intent to sue the BLM over their failure to conserve and recover endangered species within SPRNCA whose continued existence is being jeopardized by trespassing cattle.

RESOLUTION COPPER MINE AND OAK FLAT

Of several pending lawsuits that have been filed by opponents of the proposed Resolution Copper mine near Superior none is being watched more closely than Apache Stronghold v. United States brought by group of San Carlos Apaches joined by the Becket Foundation For Religious Liberty.

A full 11 judge panel of the Ninth Circuit Court of Appeals heard oral arguments in the case on March 21, 2023. At issue is whether the proposed mine's destruction of Oak Flat, a sacred site fundamental to Apache religious practice, is a violation of the Religious Freedom Restoration Act (RFRA).

A Federal District Court and a divided three judge panel of the Ninth Circuit had previously ruled that the act's proscription against government actions which substantially burden the right to practice religion is limited only to those actions which involve governmental coercion or the withholding of a government benefit. Applying this very narrow definition those courts held that the government's action in the Apache Stronghold case was neither coercive nor the denial of a benefit and thus the government had not imposed a substantial burden on the Apaches' right to exercise their religion even though the mine when completed will completely destroy Oak Flat.

The full panel's ruling could be several months away. In the meantime, the Forest Service has announced that a final Environmental Impact Statement on the proposed mine will be issued sometime this spring which will trigger the pending land swap necessary for the project within 60 days.


Photo by Tom Cheknis

FIELD TRIPS

by Mark Horlings

- Participation in field trips risks exposure to infectious diseases. If you have any symptoms of illness or have been exposed to Covid-19, stay home.
- For Tonto National Forest Day Use Passes, visit USDA Tonto Pass.
- MAS encourages carpooling. Please cover your driver's gas at the recommended rate of 10¢ per mile per rider.
- The ABA has adopted principles of birding ethics. Check them online or ask your field trip leader.
- Wear neutral colors and sturdy walking shoes.
- Bring binoculars, sunscreen, sunglasses, hat, and water.

To register, go to Ticketleap.com and search under "Maricopa Audubon" or use the links on the MAS Field Trips webpage. If you cannot attend, please cancel your reservation so someone on the wait list can join. To cancel, contact the leader (see Ticketleap) or Field Trip Chair Mark Horlings (602) 505-3455 | markhorlings@yahoo.com.

Kachina Wetlands/ Flagstaff Arboretum

MONDAY, JUNE 19

The wetlands and Arboretum, in south Flagstaff, are gorgeous summer destinations. The wetlands feature recharge ponds with waterfowl, an abundance of Western Bluebirds, a reliable Osprey or two, plus some regular piney species such as nuthatches, Steller's Jays and Mountain Chickadees. The Arboretum may have robins and a variety of warblers. Wildflowers at both locations are alone worth the trip. Prepare for a chilly start and dress in layers. Carpooling and other logistics to be decided a few days before the trip. Restrictions: Must be fully vaccinated.
Time: Leave Scottsdale 5 AM and return about 3:30 PM.
Limit: 7
Difficulty: 1-2. (Walking on flat terrain, but at about 7,000')
LEADER: KATHE ANDERSON

Desert Botanical Garden

SATURDAY, JUNE 24

We'll scan trees and cacti looking for nesting birds and other animals. We will concentrate on listening and observing behaviors of native target species to enhance and practice birding skills. Wear comfortable shoes, a hat, and sun protection. Bring water for sure and your camera if you want. We can also eBird so if you are new to that, let's get you started. Meet at the fountain by the main entrance. Final details will be emailed shortly before the trip. You must be a DBG member or their guest to enter this early. The first person to ask can be my guest.
Time: 6:45 AM - 8:45 AM
Limit: 6
Difficulty: 1. (Well-maintained trails, one paved hill.)
LEADER: JOY BELL

Tonto Natural Bridge State Park

THURSDAY, JULY 6

This park isn't large, but is a lovely spot to bird, generally with white-throated swifts swirling around your head – and below you at one of the overlooks. Chats, tanagers, swallows and flycatchers should be busy bringing up young. We'll visit Flowing Springs on the way. Carpooling and other logistics to be decided a few days before the trip. Restrictions: Must be fully vaccinated.
Time: Leave Scottsdale 5:30 AM and return around 2:30 PM.
Limit: 7.
Difficulty: 2. (Paths are mostly flat; seats available to sit out steep areas.)
LEADER: KATHE ANDERSON

Desert Botanical Garden

SATURDAY, JULY 22

LEADER: JOY BELL (FOR DETAILS, SEE DBG JUNE 24.)

Stewart Mountain Desert Tortoise Quest

SUNDAY, JULY 23

Hardy souls willing to trek in the morning heat with a chance of finding a desert tortoise can join Nessel as we traverse steep, rocky slopes searching for these iconic reptiles. The prime time is after a monsoon storm so we may add dates accordingly. We will cover the behavior, life cycle, and status of this keystone species. Bring snacks, sun protection, hat, sturdy hiking shoes and stick, a flashlight or mirror, snake gaters if you have them, and plenty of water. Details will be emailed shortly before the trip.
Time: 5:00 -11:00 AM
Limit: 8
Difficulty: 4 (steep, rocky terrain, hot, humid weather.)
LEADER: LAURIE NESSEL

Papago Park Birds and Dragonflies

SATURDAY, AUGUST 12

At this very easy, central location we will focus on our birding skills, scanning trees and cacti looking for nesting local birds and other species. We will search for fall migrants that may have dropped in, and observe the dragonflies and damselflies. Wear comfortable shoes, a hat, and protection from the sun. Bring water for sure and your camera if you want. We can also eBird so if you are new to that, let's get you started. Details will be emailed shortly before the trip. Meet at the edge of parking near the first lake and the Zoo's administration building.
Time: 6:00 AM to 8:00 AM
Limit: 6
Difficulty: 1.
LEADER: JOY BELL

Mogollon Rim Lakes

MONDAY, AUGUST 14

We'll head east of Payson on AZ 260 to Willow Springs and Woods Canyon Lakes on the Mogollon Rim. This should get us a variety of summer birds in the area - Osprey, flycatchers, tanagers, and warblers, as well as resident woodpeckers and nuthatches. Weather permitting, we'll plan a picnic lunch at one of the lakes. Details to be decided a

few days before the trip. Restrictions: Must be fully vaccinated.
Time: Start 5:30 AM from Scottsdale, return about 3 PM.
Limit: 7.
Difficulty: 2. (Walking surfaces somewhat uneven. Elev. 7600'.)
LEADER: KATHE ANDERSON

Stewart Mountain Desert Tortoise Quest

SATURDAY, SEPTEMBER 9
(For details, see Stewart Mountain July 23)

Common Black Hawk.
Photo by Tom Cheknis

Ahwatukee Summer

BY DAVID CHORLTON

. . . as though
a falling raindrop halted in midair
and became a lens through which
familiar surroundings appear in a light
that makes normality transcend itself
and become . . .

the sun wiping the pond clean
these heat alert days with a few
Mallards where shadows float on water
and only a golfswing away
is the mountain that sees everything
from a desert point of view
as it rises with the temperature, and occupies
the zone between earth and sky.
On the hottest day last week
it appeared in the form of an egret
gliding to cool itself, flying
low between the dragonflies
and away across the path that flows
from the desert to the open green
coyotes take to be a second home.
They have drunken the darkness dry
and turn back toward their mountain refuge
with the sun's taste in their mouths.
It's lonely by the freeway
entrance with a cardboard sign
asking for relief
from inflation and the heat; it's difficult
to be human when there is no shade.
Better for the single
roadrunner, who makes a living
down among the weeds
close to Western Star Park.
The rise and fall in interest rates
runs off his back like sunlight.
Traffic, meanwhile, hurries from
the hours to the minutes all
day long while the ridgeline ripples

Lesser Nighthawk
photo by Jim Burns

under passing clouds that break
into a brief and heavy
rain. Shadows push the light aside and
the light pushes back until
the rock slopes have their evening glow
when all the sidewalks turn to steam
and hummingbirds make one
last round for energy

. . . and through the gap between desert
and the urban streets
come the nighthawks dusted
with the mystery of night as they
sweep the air clean
of memories and leave nothing but
the present moment
in their place.

"I LOVE LUCY" THE PERSON BEHIND THE BIRD NAME PART II: LUCY HUNTER BAIRD (1848-1913)

By Tom Gatz

The Baird family: Spencer Fullerton Baird, wife Mary Churchill Baird (both seated); and daughter Lucy Hunter Baird (standing), on porch of residence, Woods Hole, Mass.1887. Smithsonian Institution Archives, Record Unit 95, Image n. MAH-10718

There is a movement afoot to make bird names more descriptive. Let's face it, some names are down-right confusing. If all the confusing names were changed, new birders would no longer have to struggle with pronouncing or spelling Pyrrhuloxia, embarrass themselves by reporting an "Albert's" Towhee, or search in vain for the ring on the Ring-necked Duck[1] (one of the least useful bird names ever hatched). However, while more descriptive names would certainly be helpful for new birders, it would also be a bit sad for us old-timers who would have to say goodbye to some familiar names such as Lucy's Warbler (*Leiothlypis luciae*) were it to be changed to something like "Mesquite Warbler" or "Desert Warbler" as has been suggested. We would also lose the connection to the early naturalists that some of these common names honor.

Not to be confused with 'Lucy Gray Baird' a fictional character of "The Hunger Games" fame (who coincidentally also liked snakes), Lucy's Warbler was named in honor of then 13-year-old Lucy Hunter Baird, the only child of Mary Churchill Baird and Spencer Fullerton Baird, the Pennsylvanian for whom Baird's Sandpiper and Baird's Sparrow were named. Spencer Baird was the second Secretary of the Smithsonian Institution from 1878 to 1887 and was instrumental in launching and assisting dozens of natural history expeditions to the American West. Under his leadership, the Smithsonian provided these explorers the guidance and field equipment necessary for making ground-breaking scientific observations and collections in the many fields of natural history, including the discovery of many new species of birds.

According to Kasey Sease, a PhD candidate and research associate at the Smithsonian in 2020, "*Lucy Hunter Baird did not shy away from her father's towering legacy in American Science, she embraced it.*"[2] Most of the following account is from Sease's research and the Smithsonian archives. Her descriptions bring to life the story of a remarkable woman.

Spencer Baird delighted in his daughter's self-confidence and encouraged her to explore the scientific topics he loved. In an 1850 letter reproduced in his biography, Spencer Baird described his then two-year-old child as "passionately fond of Natural History, admiring young snakes above all things." He jovially explained that she had "one or more as playthings, which range[d] from six inches to six feet in length (living)." The only animals that similarly commanded the girl's admiration were ducks. With his tender words, Spencer Baird paints a picture of young Lucy Baird "dragging" a wooden duck on wheels "from morning till night," pausing occasionally to draw "ducks and the like with her pencil." In adulthood, Lucy accompanied her father on field trips and supported his work at the Smithsonian when she was not caring for her ailing mother.

Spencer Fullerton Baird with Daughter, Lucy, 1882, Woods Hole, Mass. Smithsonian Institution Archives, SIA Acc. 11-006 [MAH-3461].

con't

Lucy Baird developed a passion for her father's discipline of ornithology and strove to chronicle his extraordinary life in a biography. Although she was unable to complete the project before her death, Baird's work reveals a long history of strong, independent, and intellectually curious women in the family. Baird, who was inspired by their examples and supported by her father, developed her own expertise in natural history and exhibited a lifelong commitment to science. By following in the footsteps of independent women and seizing the educational opportunities tendered by her father's research, Baird carved out a role for herself in American science. Miss Baird led a very successful life, being an Associate of the American Ornithologist's Union for almost 14 years and helped her father with his work. She personally knew and corresponded with several leading scientists who conducted research for the Smithsonian and the U.S. Fish Commission.

Due to Miss Baird's passing in 1913, William Healey Dall completed "Spencer Fullerton Baird, a Biography" in her honor, and made it dedicated "to the memory of a devoted daughter, Lucy Hunter Baird." Significant portions of the book consist of Lucy Baird's personal recollections, including descriptions of strong and inspirational women in her family. For example, she briefly recounts the life of her great grandmother, Lydia Spencer Biddle, who "was a woman of great decision and energy of character." When Biddle's husband was imprisoned for unpaid debts, she "put her own shoulder to the wheel" and operated "a successful business venture" to earn an income and pay for her children's education. Baird proudly explained that her great grandmother "had no fear whatsoever of disregarding the smaller conventionalities in anything which she herself deemed right and dignified. Baird also incorporated discussions of her mother's intellectual prowess into the biography. Despite persistent and often debilitating health problems, Mary Helen Churchill Baird regularly read and edited her husband's scientific writings, especially those intended for "the public at large." With strong-willed and smart role models like Lydia and Mary, Baird understood her gender to be capable of independent thought and action.

Even with her illness, Lucy Baird remained committed to the study of science. Since the origin and nature of her fatal disease was a mystery, Baird instructed her doctors to conduct an autopsy when she passed to " further medical knowledge." Her will also stipulated donations to the Philadelphia Orthopedic Hospital and Infirmary for Nervous Diseases and the Smithsonian Institution.

Kasey Sease appropriately concludes that *"Lucy Hunter Baird was much more than a devoted daughter. She was a knowledgeable naturalist supported by generations of strong women and a loving father."* Mesquite Warbler? Not if I had a vote. Call me old fashioned, but I'm squarely in the "I Love Lucy" camp.

Retired biologist Tom Gatz has been a MAS member since 1981.

con't

The Megatherium Club

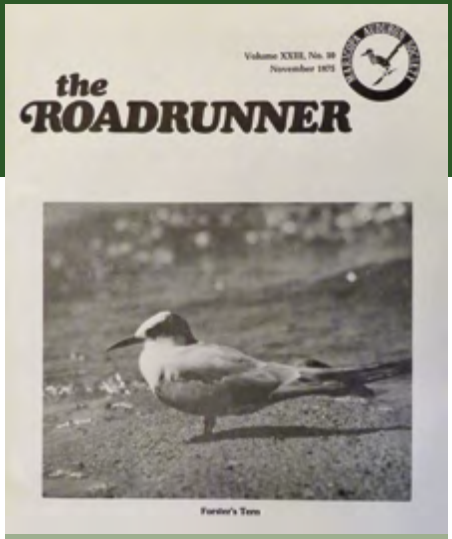
In the mid-1800's and with the encouragement of then Assistant Secretary Spencer Baird, an eccentric, rotating group of young naturalists who helped build the Smithsonian's collections formed the Megatherium Club, named after the extinct genus of the Giant Ground Sloth. Many were self-taught and they would devote rigorous weekdays to the demanding work of identifying and classifying species and "spend their nights in revelry". On Sundays, they recuperated from the week's stresses and excesses with long nature hikes. Lucy Baird, though not a regular attendee of the Smithsonian's Megatherium Club, held its members near and dear to her heart, and "assumed, like her mother a maternal attitude toward these young gentlemen." Eventually, Joseph Henry, the first secretary of the Smithsonian, evicted them from their Smithsonian Castle suites because he disapproved of the way the members behaved, including holding sack races in the Great Hall and periodically serenading his daughters. Lucy watched out for the members of the club and reported back on the rumors and reports that were spreading about the club's activities.[7,8]

Birds Named After Women

Most North American birds named after women (Lucy's, Grace's, and Virginia's warblers; Anna's Hummingbird) only use their first names. However, the Blackburnian Warbler is named in honor of Anna Blackburne (1726-1793), a wealthy, somewhat frugal, and highly regarded English naturalist who corresponded with Carl Linnaeus back in the day.[3] Another brief exception was "Bailey's Chickadee" named in 1908 after renowned ornithologist, Florence Augusta Merriam Bailey (1863-1948).[4] Her book *Birds Through an Opera Glass* is considered the first field guide to birds. She was the first woman to become a member and Fellow of the American Ornithologists' Union, and she was a vocal opponent of the use of bird feathers in hats[5], starting a movement that gave rise to the Audubon Society. It was later determined that "Bailey's Chickadee" was only a southern California sub-species of the Mountain Chickadee, so the common name honoring her never stuck. Still, her surname persists in the scientific name of the subspecies (*Parus gambeli baileyae*) and that honors her devotion to birds.[6]

RESEARCH ADDS NEW SPECIES TO THE MARICOPA COUNTY LIST

BY JANET WITZEMAN



County bird #460: Arctic Tern, 10 July 1974. Photo by Bob Witzeman

Recently I learned from Gary Rosenberg, field guide for Avian Journeys and Secretary of the Arizona Bird Records Committee, that Dave Stejskal, founder of Field Guides and co-author (with Gary Rosenberg) of *Finding Birds in Southeast Arizona,* decided to compile his Maricopa County list, and was reading through old editions of the *Roadrunner*, the original newsletter of the Maricopa Audubon Society, to learn what species he reported when he lived in Phoenix. When he came to the November 1975 issue he noticed that the cover photo was of an Arctic Tern, not a Forster's Tern as labeled. The tern was photographed by Bob Witzeman, longtime MAS Conservation Chair, on 10 July 1974 at Painted Rock Dam.

I had given Bob's extensive library of slides to Gary and he was able to find the box labeled Forster's Tern from that day. Several photos confirmed the field marks of an **Arctic Tern** and enabled the Arizona Bird Committee to accept it as #460 on the Maricopa County List.

Seven additional species have been added since the third edition of *Birds of Phoenix and Maricopa County* was published in 2017:
#461 **Pacific Golden Plover** was reported 11 September 2011 at Glendale Recharge Pond by Melanie Herring and accepted by the Arizona Bird Committee after the book was published.
#462 **White-rumped Sandpiper** was photographed at Gilbert Water Ranch 3 July 2018 by Sean Fitzgerald.
#463 An adult male **Ruby-throated Hummingbird** was photographed at Hassayampa River Preserve by Robert Bowker 12 July 2018.
#464 **Mexican Duck** was added in July 2020 when the American Ornithological Society split this species from Mallard.
#465 **Chimney Swift** was found in Buckeye by Caleb Strand 17 September 2020.
#466 A **Northern Jacana**, found by Marceline VanderWater 14 December 2021 on the Fort McDowell Yavapai Nation..
#467 A **Fan-tailed Warbler** was photographed at Granite Reef by Torin Waters 13 November 2022.
Updates to the county list are published on the "Birds of Phoenix" page of the MAS website, under the Publications menu.

County bird #467: Fan-tailed Warbler. Photo by Torin Waters

Janet Witzeman has been a member of Maricopa Audubon Society since 1958. She has co-authored three editions of "Birds of Phoenix and Maricopa County", compiled the county bird records since 1969, is the Arizona Bird Committee assistant secretary, and treasurer of the Central Arizona Butterfly Association.

con't from p. 10

[1]https://www.audubon.org/news/its-time-rename-ring-necked-duck
[2]https://siarchives.si.edu/blog/lucy-hunter-baird-much-more-devoted-daughters
[3]https://www.euppublishing.com/doi/pdf/10.3366/jsbnh.1977.8.2.148 Anna Blackburne - A Neglected Patroness of Natural History
[4]https://www.audubon.org/news/birdist-rule-101-learn-about-people-certain-birds-are-named-after
[5]https://wams.nyhistory.org/industry-and-empire/fighting-for-equality/florence-merriam-bailey/
[6]https://en.wikipedia.org/wiki/Florence_Merriam_Bailey
[7]https://siarchives.si.edu/featured-topics/megatherium/introduction
[8]https://siarchives.si.edu/featured-topics/megatherium/edward-drinker-copelucy-hunter-baird

Those who bird Granite Reef, Phon D. Sutton and Coon Bluff can see that Orme Dam was never built, thanks to the perserverence of MAS conservationists and our friends.

Since 1982, we have celebrated the death of the proposed Orme Dam every November at the Orme Dam Victory Parade on the Ft. McDowell Indian Reservation. Join us for this annual event and help to continue the tradition, started by Bob Witzeman, Carolina Butler, Frank Welsh, Herb Fibel, Scott Burge, and others, of marching in the honored position behind the Color Guard.

But the dam was not the only threat to this riparian treasure. Trespass cattle caused much damage but were successfully removed. Now it's feral horses that are threatening to destroy the fragile ecosystem that is not adapted to these magnificent but misplaced animals. Read more on page 4.

To see the maps mentioned in the article, visit the Maricopa Audubon Society website - About Us - Chapter History 1968-2006 - p.6.

OCTOBER 1971

the ROADRUNNER

Conservation Chair Peggy Spaw alerts our chapter to the CAP dams

The proposed Orme Dam, located close to Phoenix, at the confluence of the Salt and Verde Rivers is part of the chain of water control imperatives that go with the Central Arizona Project, the CAP.

As a refresher: The CAP is simply a plan to import Colorado River Water into the central Arizona area. Central Arizona, in rough boundary, means that this water project relates to the Phoenix area at the North, and the Tucson area at the South. The Central Arizona Project was authorized by Congress in 1968. (see attached CAP map)

The Orme Dam will be an impediment to the Verde and Salt Rivers that will halt the free-flow of these rivers and change the ecosystem that has established and flourished bankside for centuries. The waters of the Verde, a particularly thrifty river, hold large mouth bass, channel catfish and carp. The Arizona Game and Fish Department plants 20,000 trout a year below Stewart Mountain Dam, and muledeer, javelina, cottontail, bobcats and coyotes relate their daily existence to the free-flow of the river within this proposed Orme Dam floodsite.

For those who have used the region for varied bird observations, recognize that this area which is only 25 miles from town, via the Beeline Highway, is irreplaceable. It bears the only remaining large stand of mature cottonwoods and mesquite thickets along the Salt. Palo Verdes, Ironwoods and streamside annuals all make places of retreat and nourishment for creatures ranging from anthropods, through birds up to large game animals.

The cattail marshes make a rare stopover for wintering birds, particularly for rails.

Other birds whose nesting and presence in our environment will be disturbed or completely eliminated by the Orme floodsite include the BALD EAGLE; LEAST BITTERN; GREEN HERON; YELLOW-BILLED CUCKOO; BELL'S VIREO; YELLOW WARBLER; YELLOWTHROAT WARBLER; SUMMER TANAGER; and the BLUE GROSBEAK.

The Orme Damsite has its "cousins" on the drawingboards too: Buttes Dam on the Gila River; the Charleston Dam on the San Pedro River and Hooker Dam, on the Gila River in New Mexico. The network of aqueducts and the thermal power plant that is projected to pump water from Lake Havasu into Granite Reef Aqueduct, thence into the Orme Reservoir, complete the complex. (see map)

Your conservation committee refers you to the map entitled LOWER COLORADO RIVER.

At its September meeting, the Arizona Conservation Council heard the Regional Director (Region 3) discuss the condition of the Lower Colorado River with its history of dredging and phraeatophyte removal. In summary, the Director stated that he believed dredging and manipulation of the river had reached its saturation point. It is the aim of his organization to begin a program of restraint on dredging and restoration of vegetation, particularly in the Cibola and Imperial sections as indicated on this map. Of course, "revegetation" would be a matter of generations, and a matter of experiment too. Maybe they'll succeed and maybe they won't. From the standpoint of wildlife health and preservation, most of the damage is long-since done.

Peggy Spaw

FEATHERS 101 AND FEATHERFACTS

Text and Photographs by Matt van Wallene

License to Study

Feathers are a suppressed topic in online forums and the birding community in general. The possession of feathers and other parts of native North American birds without a permit is prohibited by the Migratory Bird Treaty Act (MBTA 1918). There is no exemption for molted feathers or those taken from road or window-killed birds. As a result, the law puts a damper on curiosity and discovery. However, there is a solution for the determined citizen scientist.
The state issues a Scientific Activity License that

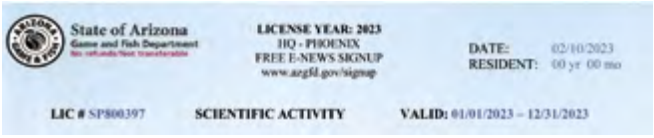


Figure 1. Scientific Activity License

allows for the possession of bird parts for a fee for one calendar year. The caveat is a study has to be a basis for the possession and a report is due the state annually.

Feathers 101: Parts of a Feather

Before embarking on a feather study, a basic understanding of feather morphology and function are needed. Where better to start than a chicken (gallus gallus domestic). It doesn't require a permit, has the majority of feather types, and free if you have a nice neighbor that has egg laying hens. Let's become a plumologist!

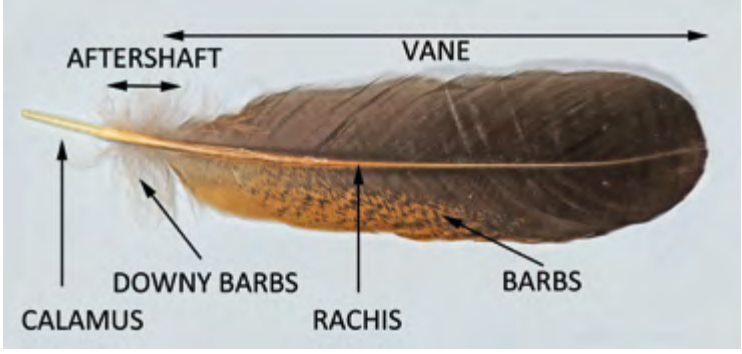


Figure 2. Parts of a chicken feather

A chicken tail feather (Figure 2) displays the standard parts of a bird feather. The calamus (shaft or quill) is the base of the feather. It is hollow and without barbs. Extending from the calamus is the rachis (scapus). The base of the rachis is a section called the aftershaft that has downy barbs. The rachis ends with a section called the vane (or web) where barbs are attached at a 45˚ angle. Barbs attached to the rachis come in three basic structures - pennaceous, plumulaceous and filoplume (discussed in the feather type section).

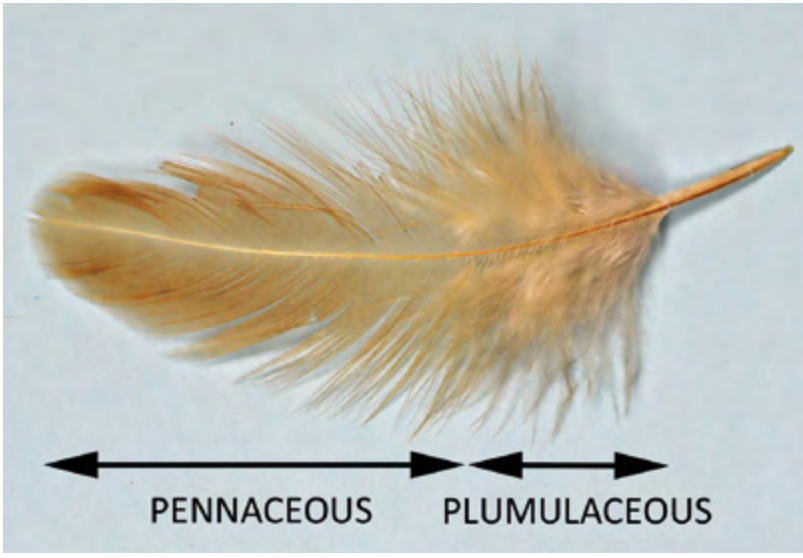


Figure 3. Chicken contour feather

This chicken contour feather (Figure 3) shows two types of feather structures. The pennaceous end is characterized by sturdy, interlocking barbs whose woven surface repels dirt and water and protects against wind and sun. The plumulaceous end is loose and chaotic, which can trap air to insulate the body.

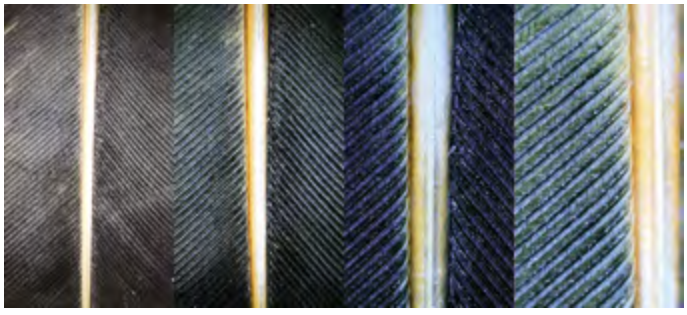


Figure 4. Pennaceous barbs attached to rachis with increasing magnification

Figure 4 shows the barbs of a chicken tail feather attached to the rachis with increasing magnification - well structured, very tight and sturdy.

Figure 5. Pennaceous barbules

Figure 5 shows a primary feather barb microstructure close-up. Each stiff barb has a central ramus where barbules are attached at a 45° angle. Note the texture difference between the distal and proximal barbules. The proximal and distal sides of adjoining barbs overlap at 90°. Pennaceous barbules have hooklets (barbicels or hamuli) that act like Velcro (cocklebur origin) to interlock barbs and stiffen the feather

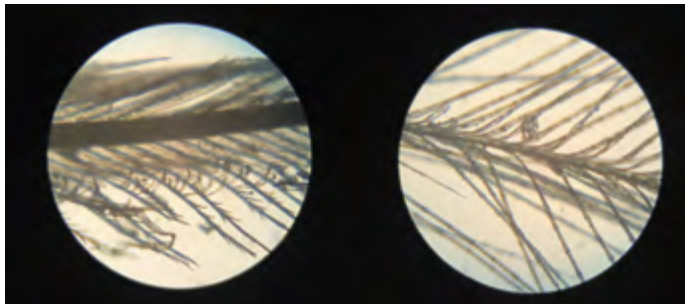


Figure 6. Pennaceous (left), plumulaceous (right).

for flight (figure 6, left image). There are always exceptions as in the case of cormorants whose feathers absorb water to help them dive and are why you often see their wings outstretched while sunning. Preening reconnects separated barbs.

Plumulaceous barbs look in disarray as they don't have hooklets to hold them together (Figure 6 right image). The barbs turn fluffy close to the rachis and end in a flexible ramus with longer and wider spaced barbules.This arrangement allows air to be trapped for insulation.

Figure 7. Plumulaceous

Figure 7 shows various magnifications of the aftershaft of a contour feather. Contour feathers are what cover the body and wings.

Feather Facts

Feathers are made of keratin, the same material that makes up fingernails, hoofs, claws, hair, scales, beaks and talons.

Feather follicles are connected to each other by several muscles, notably by the smooth apterial muscle (counteracting horizontal movements of feathers), the smooth erector muscle (which lifts the feather up)

Figure 8. Erector muscle in action on Brown-headed Cowbird (left) and Ruby-crowned Kinglet

(Figure 8) and the depressor muscle (which pulls the feather down and counteracts the vertical rotation of feathers induced by airflows).[1]

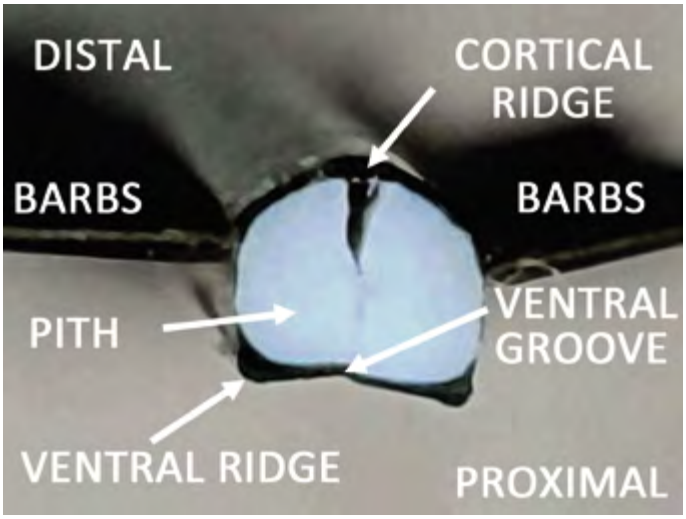


Figure 9. Gila Woodpecker rectrix rachis cross

The cross section of a tail feather rachis changes from circular at the calamus end to rectangular towards the distal end. The ventral groove and ridges were found on the flight, tail, and contour feathers of the chicken. The void seen in Figure 9 is natural. The pith is a stiff foam-like material.

Feathers do not have nerve endings. Herbst corpuscles are pressure sensitive and the most widely distributed mechanoreceptors in birds. They are present at feather follicles and many other parts of the body. They resemble the Pacinian corpuscles of mammals and detect rapid mechanical deformation (vibration). Not every follicle has a corpuscle[2]. These corpuscles signal any movement in the feather.

Unlike human hair follicles, which are randomly distributed, feather follicles are arranged in a precise pattern so that feathers properly overlap. Follicles grow in patches called pterylae. There are parts of a bird that do not have follicles, but those bare spots are

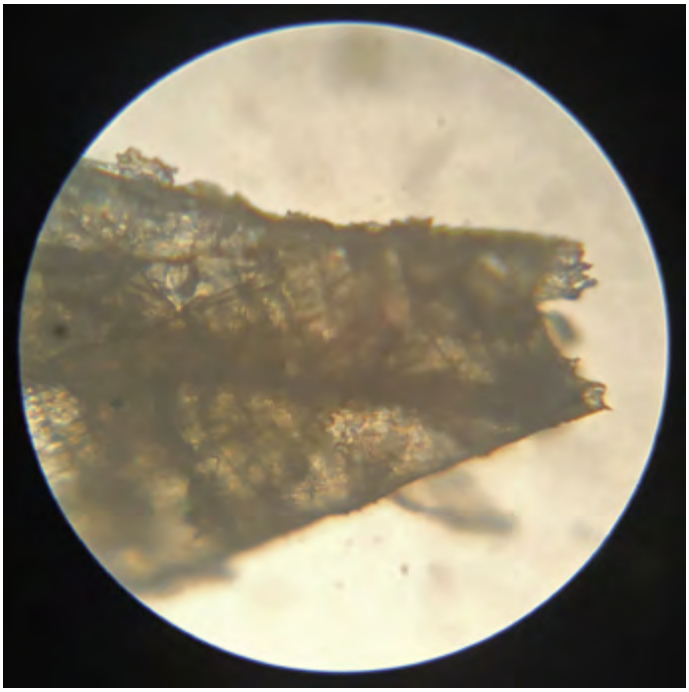


Figure 10. Two feathers for one follicle, called polyfolliculosis

Figure 11. Swallow-tailed Kite preening

covered by their surrounding pterylae. On occasion a malformation of the follicle occurs resulting in two or more feathers being grown. This condition is called polyfolliculosis[3]. Figure 10 shows two calami fused at the base and from a single follicle.

The preening (uropygial) gland produces oil used by birds to condition their feathers. This gland is on the bird's back just above the base of the tail. The bird rubs its beak across the gland, picking up the oil. It then applies it all over (Figure 11).The oil is like a hair conditioner that keeps the feathers healthy and aids in repelling water.

Figure 12. Barn Owl (left) and Inca Dove

The Barn Owl in Figure 12 has a **facial ruff** made up of stiff auricular feathers, the same type shown on the Inca Dove. The owl's feathers make a shape like a parabolic microphone increasing the sound sensitivity by 20 decibels.

Sonations are sounds produced by feathers. Some male hummingbirds, like Anna's, use auditory displays as part of their mating ritual. The male hovers about 50 feet above the nest and then dives. At the last moment, it pulls out of the dive causing a whistle sound made by the tail feathers.

For more feather facts, see "A Review of Nomenclature for Avian Color Aberrations", CW Winter 2022, pp. 19-20.

[1]Delaunay, Mariane G. (2020) Anatomy of avian rictal bristles in Caprimulgiformes reveals reduced tactile function in open-habitat, partially diurnal foraging species. Journal of Anatomy, 237:355–366 .

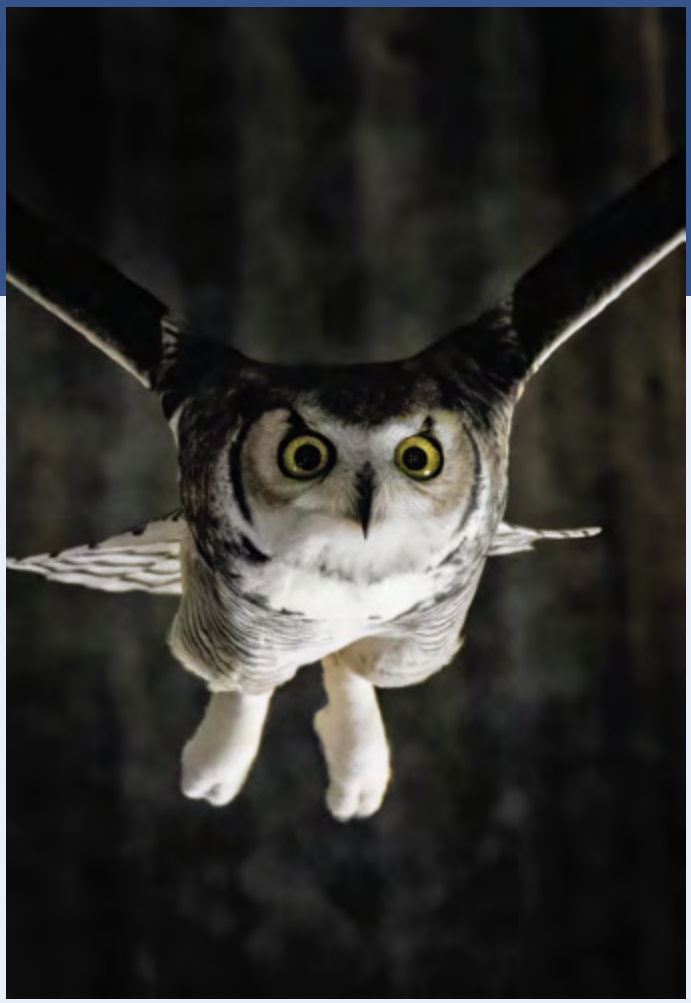
[2]Van den Broeck, Martine. (2023) Histology of Birds. Ghent University "http://www.histology-of-birds.com/ galleries.php?id=74"

[3]Rich, Gregory, DVM. (2023) Polyfolliculosis in Birds. VCA Animal Hospitals "https://vcahospitals.com/know-your-pet/ polyfolliculosis-in-birds"

Matt van Wallene is a regular contributor to the Cactus Wrendition. His website "hollandwest.com" delves into the fascinating and quirky world of birds through his research and captivating photography.

YOU CAN HELP!

The author continues to collect bird specimens for his feather studies. If you come across a dead bird, please contact Ma: 480-204-1104, zoutedrop@gmail.com.



Great Horned Owl

THE RAPTORS OF KYLER NOE

Kyler Noe is a 21 year-old from Gilbert, Arizona. His concerns about the impact of habitat loss and climate-related decline in prey availability in the southwest drive his passion to document and photograph raptors in their natural environment, which he has been doing since he was 15 years old. All images were made ethically, without disturbing their natural behavior. See more of his amazing images on Facebook and on Instagram @arizona.birds. Kyler has created a library of comparable images to aid in raptor identification.

About the images below:

Juvenile Zone-tailed Hawks display very dark undersides with a varying amount of white speckling on body and underwing coverts. Light primaries and secondaries as well as a light, narrow banded tail may or may not have a dark trailing edge and terminal band.

Adult Zone-tailed Hawks have a solid dark underside with light primaries and secondaries ending in a dark terminal band.

An aggressive mimic of the Turkey Vulture, Zone-tailed Hawks often are seen flying with the carrion-eating vultures, mimicking not only their plumage but their rocking, dihedral flight. Look for Zone-tailed Hawks near the bottom of a kettle, closer to the prey they are trying to deceive.

(left) Juvenile Zone-tailed Hawk (center) Adult Zone-tailed Hawk (right) Guess. Answer on next page.

Barn Owl

Swainson's Hawk

Great-horned Owl

Answer: Dark-morph adult Red-tailed Hawk

PFAS IN MARICOPA COUNTY

By Jelena Grbic

Per- and polyfluoroalkyl substances (PFAS) have been making the headlines for quite some time because of their forever chemical nature. In fact, these chemicals are guaranteed to be detected in the bodies of humans[1] because of accumulated exposure. What are PFAS? They are man-made chemicals that have been used in a variety of products since the 1940s for their water-resistant properties. A few examples of their use include nonstick cookware, waterproof/resistant rain gear, cosmetics, and fire suppressant in aqueous film-forming foams (AFFFs).[2] Ingestion has been found to be the main route of exposure to humans, generally from contaminated water and food. Research has found that high levels of PFAS can cause increased cholesterol and blood pressure, kidney and testicular cancer, pre-eclampsia and lower birth weight.[3]

PFAS has been found in all niches of the environment. For example, a field study of swans, water, sediment, soil, and grass samples in an urban lake of Melbourne, Australia detected PFAS in every type of sample. Birds from across the world contain PFAS in their eggs, blood, and liver.[4] So what are PFAS' impacts on birds? Some researchers have found reduced hatching success, and eggshell thinning. Generally, "avian field effects data indicate that PFAS are associated with impacts on a variety of suborganismal endpoints as well as reproductive endpoints, although mechanism-based quantitative linkages between exposure and effect have not yet been established".[5]

> *These forever chemicals … cause harm to human health at very, very, very, very low concentrations to the point where there is no safe concentration of PFAS. The logical thing to do is just not spread it all over the place.* -
> Laura Orlando, Just Zero.

Although there are many everyday products that contribute to this widespread problem, there are some key sources. For example, military sites have historically used PFAS-containing AFFFs as a fire extinguishing agent, and this has left legacy contamination in the groundwater and soils. The Department of Defense has completed a preliminary assessment of PFAS contamination at 405 installations and determined that 304 of them need to be further investigated,[6] including the Luke Air Force Base in Maricopa County.[7] Other sites where

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[1]https://www.atsdr.cdc.gov/pfas/health-effects/us-population.html

[2]Glüge, J., Scheringer, M., Cousins, I. T., DeWitt, J. C., Goldenman, G., Herzke, D., ... & Wang, Z. (2020). An overview of the uses of per-and 2 polyfluoroalkyl substances (PFAS). Environmental Science: Processes & Impacts, 22(12), 2345-2373.

[3]https://www.atsdr.cdc.gov/pfas/health-effects/index.html

[4]https://www.bonisolialqua@lab.com/pfas-concentrations-in-birds.html

[5]Ankley, G. T., Cureton, P., Hoke, R. A., Houde, M., Kumar, A., Kurias, J., ... & Valsecchi, S. (2021). Assessing the ecological risks of per-and 5 polyfluoroalkyl substances: Current state-of-the science and a proposed path forward. Environmental toxicology and chemistry, 40(3), 564-605.

[6]https://www.acq.osd.mil/eie/eer/ecc/pfas/data/cleanup-pfas.html

[7]https://www.azdeq.gov/DOD/Luke-AFB

AFFFs were used include firefighting training sites, such as those at airports and fire stations. Another unique source is the application of sewage sludge on land. Sewage sludge is fertilizer made from remaining solids of wastewater treatment plants and it is estimated that 5% of all crops in the U.S. apply the fertilizer. Since PFAS is found in home products and from certain industrial processes and products, PFAS has been found to concentrate in sewage sludge.[8] Overall, a recent article estimated potential PFAS contamination sources in 8 the U.S., and in Maricopa County alone found 7 wastewater treatment plants, 2 major airports, 8 military installations, 6 formerly used defense sites, and 448 industrial facilities.[9]

Federal regulations to enforce contaminant limits on PFAS in the environment and public water systems have been a work in progress but great headway has been recently made. On March 14th, the Biden Administration proposed a national drinking water standard that would make it a requirement for water utilities to monitor six PFAS.[10] At the state level, Arizona is making proactive strides to monitor PFAS contamination. Senators Krysten Sinema and Mark Kelly secured $13.59 million in 2022 to address PFAS contamination in drinking water.[11] The Water Infrastructure Finance Authority of Arizona has provided the Arizona Department of Environmental Quality (ADEQ) $3M to test *all* of Arizona's public water systems.[12] Prior to this, ADEQ had only completed testing in some of these systems. So far, in Maricopa County, results are showing elevated levels to the east of Luke Air Force Base in Glendale, multiple City of Tempe wells, the Alma Rancheces well in Chandler, Brophy College well in Phoenix, Clearwater Utility in Buckeye, a couple wells south of New River, and a well on the Rio Verde north of Fountain Hills.[13] For up to date results go to https://azdeq.gov/node/7940 and click on the link to the map.

Detection does not address prevention or remediation. There is no doubt that we must eliminate consumer and industrial use of PFAS chemicals. So what can individuals do to avoid PFAS usage and exposure?

• Stay up to date on PFAS testing in your drinking water and whether the utilities are installing effective treatment systems. If your water is contaminated, consider alternative sources or install a treatment system at home.
• Avoid PFAS containing materials day to day, such as nonstick pans and "water resistant" materials (try a waxed canvas material instead).
• It is wise to investigate a company's commitments/ policies relating to PFAS before purchasing anything you suspect may contain the chemicals (e.g., REI just announced it will ban PFAS starting in 2024[14] though tread carefully in case they start using other PFAS' that are not yet of concern in the U.S.).
• Buying or renting a new home? Consider potential sources of contamination nearby (e.g., military bases).
• If you own or work at a farm with sewage sludge application, make sure PFAS testing is being completed on the biosolids.

Jelena Grbic is the MAS Secretary, and has previously worked as an Environmental Scientist at Tetra Tech where she worked on many projects monitoring PFAS contamination at military sites.

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[8] https://www.sciencefriday.com/segments/fertilizer-sewage-forever-chemicals/

[9] PFAS Project Lab, "Presumptive PFAS Contamination Site Database", accessed October 12, 2022. https://doi.org/10.1021/acs.estlec.2c00502

[10]https://www.epa.gov/newsreleases/biden-harris-administration-proposes-first-ever-national-standard-protect-communities

[11] https://www.sinema.senate.gov/135-million-investment-coming-arizona-address-pfas-forever-chemicals-drinking-water-sinema-and

[12] https://azdeq.gov/press-releases/press-release-adeq-announces-proactive-3-million-public-water-system-sampling-plan

[13] https://experience.arcgis.com/experience/9a4b9734d7134b5e8e4820a996eb3191

[14] https://www.rei.com/newsroom/article/rei-co-op-raises-bar-for-companies-operating-in-outdoor-industr

THE VALUE OF WATER

BY DR. KEN G. SWEAT

Riparian areas are those parts of terrestrial nature that have water present, either year-round or seasonally. If year-round, we call them lakes, reservoirs, creeks, streams, or rivers. If the water is seasonal, we call them washes in the case of streams or playas in the case of bodies of water. Riparian areas are noted for an abundance and diversity of living organisms including animals such as birds or arthropods, plants such as trees, shrubs, or grasses and even members of obscure groups such as the algae in the water, bacteria in the water-logged mud and fungi in the soil. Riparian zones in arid ecosystems such as those found in Arizona harbor an incredible amount of biodiversity.

Plentiful water can increase biodiversity by supporting species such as cottonwoods, cattails, and sedges that require more to drink than most desert dwellers. Secondary effects further increase biodiversity. Robust, verdant plant life leads to increases in animal life by providing bountiful meals for plant eaters such as aphids, grasshoppers, and seed eating birds and rodents. In turn, these herbivores become meals for carnivores such as lady beetles, frogs, snakes, insectivorous birds, and so sustain those populations. Vegetation also provides a greater diversity of habitats. As trees reach to the sky, they create numerous places for other animals to live and thrive, such as birds nesting in high boughs, or caterpillars concealed in the rich canopies of leaves that they feast on. This structural diversity is especially crucial in the desert where trees or other tall vegetation is scattered and isolated.

51st Avenue, downstream of the Rio Salado Habitat Restoration Area.

This is the consensus of current ecological research. In 2012 a team of scientists from ASU, U of A, U of Maryland and the Drylands Institute published research that looked at differences in species richness between riparian and upland ecosystems for eleven different groups of organisms: forbs and grasses, shrubs, trees, solpugids, spiders, scarab beetles, butterflies, lizards, birds, rodents, and mammalian carnivores[1]. The research demonstrated that in the Sonoran Desert, riparian areas had more species as well as different species from the upland communities.

Andromorph female blue-eyed darner, Rio Salado.

All of these thoughts were in my head when I recently took a class of environmental science students to hike the Rio Salado trails in Phoenix. Their assignment was to assess and analyze plant diversity. I was interested to see how this riparian area was different from those I had visited far from cities and other influences of our civilization. While restoration efforts along the Salt River in Phoenix using groundwater wells and stormwater outfalls are commendable, its "uplands" are dense urban development, not known for being rich in wild species.

What my students and I found did not disappoint.

con't

The vegetation around the river was robust, in several places too thick to see or even access the water. There was a host of expected local species such as honey mesquite, littleleaf and blue palo verde, and Fremont cottonwood. There were also a number of introduced species including chaste trees, salt cedar, and fountain grass. There were even a few Mexican Fan Palms, a species that does occur in the westernmost parts of the Sonoran Desert, as one native population thrives in the Kofa Wildlife Refuge in riparian habitat in the appropriately named Palm Canyon. Here, however, the palms are likely the result of avian seed dispersal from a domestic tree somewhere in Phoenix and indeed are considered an invasive species. I was genuinely surprised to see the bright orange strands of dodder, a parasitic plant, completely infesting one of the chaste trees. Since the dodder is a native species, I did not expect it to grow on an introduced tree species, especially when native palo verdes and mesquite were present nearby. The plant community was at least as diverse if not more so, than what I had seen in more remote riparian areas.

After the class was done and the students had submitted their report, I again ruminated on the question of biodiversity in this riparian area. While a robust statistical analysis was not possible since because all I had were qualitative observations, I had to grudgingly conclude that this small piece of riverine habitat in the heart of an industrialized part of the city was probably richer in species diversity than many of the remote riparian areas. The landscaped plants at the visitor center created an even more diverse ecosystem. While some may not include these deliberately added species, I do, as it is a distinction lost on the pollinators that visit their flowers.

While there are certainly other metrics by which to compare these two types of riparian areas, and I certainly would argue strongly for the preservation of wild riparian areas regardless, it was comforting to see how biodiversity and a major city could exist side by side. Even more encouraging is knowing what this area looked like thirty years ago—mostly barren riverbanks and illegal dumps, and how it was restored by people who decided that a living river was worth having within the city (see side bar). For too many of us, the demands of modern life isolate us from nature. Preserves such as this are crucial not just for the creatures that live in them, but for the city dwellers that hike, bike, birdwatch, and botanize in them. Certainly, if we are to teach people to value the environment, we need spaces like these to show them the beauty of the natural world.

Rio Salado Habitat Restoration Area

Before the arrival of European explorers in the early 1500s, the Salt River through what is now Phoenix was a mostly unbroken green ribbon of water-loving trees and shrubs such as Fremont Cottonwood, Goodding willow, seep willow, arrow weed, and other native streamside vegetation. Their shallow roots require water at or near the surface. Along the river were perennial springs with surface water. Higher on the river's banks, velvet and screwbean mesquites thrived where their roots could find moisture as deep as seventy-five feet.

This lush vegetation provided shelter, food, and shade for animal life of exceptional diversity, especially for a desert environment.

Eventually, however, upstream dams and water withdrawals by non-native settlers drastically reduced water levels in the river system making it unavailable to streamside plants, called Phreatophytes, to exist. It became littered with trash and toxic wastes. Today's efforts to recreate the native riparian vegetation in sites such as Rio Salado in Phoenix are producing significant improvements in biodiversity.

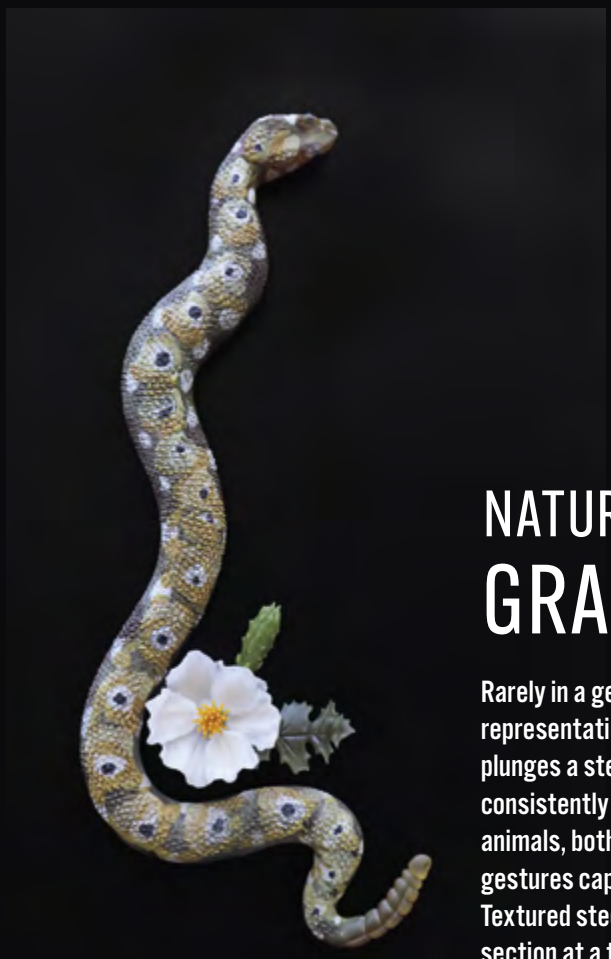
After all, water in the desert is a powerful magnet for life.

-Mark W. Larson

Ken Sweat is a teaching professor and Senior Global Futures Scientist in the School of Mathematical and Natural Sciences at ASU's West campus, where he has worked since 2000. Dr. Sweat's research and teaching revolve around plant biodiversity and using plants to clean up pollution in natural environments.

Mark Larson is MAS' Audubon Southwest Council Representative and former MAS President. He also volunteers with Donor Network of Arizona.

[1] Candan U. Soykan, C., Brand, J., et al., Multitaxonomic Diversity Patterns along a Desert Riparian–Upland Gradient, (2012), PLOS ONE, https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0028235



NATURE THROUGH THE ARTISTS' EYES:
GRANT AND ERIN GARMEZY

Rarely in a generation does one possess the virtuosity to create such a wealth of stunning representations of nature as does Richmond, Virginia glass artist Grant Garmezy. He plunges a steel blowpipe into a 2,100°F molten glass crucible and from this glowing mass consistently coaxes perfectly proportioned animals, both real and imagined. Subtle gestures capture the essence of each creature. Textured steel tools rolled over one heated section at a time create the verisimilitude of reptile skin and bird feathers.

Many of these sculptures are large and must be made in parts - a wing, a head, a foot, each kept warm in a kiln (annealer) until the final assembly, when connections are heated enough to merge seamlessly while the rest of the piece is kept warm with hand-held torches - hot enough to prevent cracking, cool enough to maintain shape and texture. These complex pieces take hours, sometimes days, and require a team of 3-5 people working in synch.

(above left) Sonoran Rattler with Prickly Poppy, 29" x 17" x 3.5"
(above right) detail

(right) Soaring Light, glass, steel, marble, 48" x 12" x 24"

(far right) Queen of the Nile, 25" x 18" x 3.5"
(right) detail

Grant's wife Erin forms detailed botanical accents by melting glass rods in a flameworking torch. These are carefully attached just before the finished piece goes into the annealer to cool slowly. A second too long in the glory hole, a gas-fueled chamber that reheats the piece as it is being made, could instantly ball up hours of work into a melted blob. Timing, patience, stamina, and above all confidence are required to create these masterpieces. The slightest mistake can ruin hours of work! Heartbreaking! But virtuosos like the Garmezys carry on, creating unique and extraordinary glass art that celebrates nature.

See more:
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615 476 3337

(left) The Night Watch, glass, steel, charred tree stump, 57" H

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MONTHLY MEETING

Monthly meetings resume in September. For questions or speaker suggestions, contact a Board member.

TWO WAYS TO JOIN AND RECEIVE THE CACTUS WREN•DITION

1. National Audubon Society - For dual membership in NAS and MAS call (844) 428-3826 and ask to be assigned to MAS chapter B00. You will get The Cactus Wren•dition as a courtesy. To be guaranteed a subscription, please consider joining MAS as a Friend.

2. Maricopa Audubon Society Friend dues go directly to MAS and support our mission. Friends are guaranteed a print subscription to The Cactus Wren•dition, and discounts on books and merchandise. Dues are $10/year student/youth, $20/ year individual. MAS is a non-profit 501(c)(3). All dues above $20 are tax deductible.

You can join at a monthly meeting; online at maricopaaudubon.org/join; or send your name, address, phone or email, and a check payable to Maricopa Audubon Society to the MAS Treasurer (right). Effective April 1, 2023, all Friends memberships will renew annually each year on April 1st. Subscriptions are pro-rated.

SUBMISSIONS

Copy for The Cactus Wren•dition must be received by January 15, April 1, July 1, and October 1. Articles not received by the deadlines may not appear in the upcoming issue. Some issues feature a theme. Feel free to inquire and take the theme into account. Editor: Laurie Nessel laurienessel@gmail.com

OPINIONS

The opinions expressed by authors in this newsletter do not necessarily reflect the policy of NAS or MAS.

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