

Bluebird

Journal of the North American Bluebird Society

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SUBSPECIES

Bluebirds, like many other bird species, come in a variety of subspecies. This means there are definable plumage and/or other physical differences between regional populations of the same species. Ornithologists recognize eight subspecies for Eastern Bluebird and six for Western Bluebird. There are no recognized subspecies for Mountain Bluebird. To learn more about bluebird subspecies, turn to the article on page 7.



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From the President

Doug LeVasseur

Not long ago I came across an interesting statistic: Twenty-one percent of all Americans closely follow news related to international affairs. That is up from 14 percent two years ago. Given recent events taking place across America and around the world this increase comes as no surprise. But still, just one in five Americans is interested in what goes on across state, provincial and national borders?

I like to think of myself as that one in five. But that doesn't mean I don't have an interest in what happens locally. Here in the hill country of southeastern Ohio our township trustees are the last of the lot who still go door-to-door shaking hands prior to elections. In past years, candidates solicited votes with monogrammed pens. This year challenger, Dwight Miley, upped the ante a bit when he distributed a nice little sliding scale used to estimate the number of board feet in your standing timber. The incumbent, Tony Shultes, answered with monogrammed fly swatters.

I voted for Tony, not because the flies were especially bad this year, but because Tony has always done a great job of keeping the little cemetery on 'Possum mowed throughout the summer. You can't even see the cemetery from the road and no one has been buried there since a 92-year-old spinster, Beth Riche, passed away 30 years ago. So there is no real pressure on Tony to mow. But the little cemetery does provide excellent habitat for two of my most productive bluebird nest boxes.

For all of us bluebird conservation begins at home with our individual trails. These individual trails are the individual brush strokes that collectively paint the picture of healthy bluebird populations across North

America and bring the presence of bluebirds to thousands if not millions of people. We have every right to feel joy, satisfaction and pride when we see "our" bluebirds in our backyards and neighborhoods.

But you can have another heartfelt bluebirding experience by stepping back far enough to look across county, state, provincial, and national borders. The landscape that bluebirders collectively have created is huge and inspiring. We are all part of it, and we should enjoy it. It is a living landscape that you join with a membership to NABS or one of its affiliates.

It is a landscape you can participate in by attending an affiliate or international NABS convention and by joining their research efforts. It is a view you can share by sharing your newsletters or giving a membership to a family member or friend. You can contribute to this landscape by volunteering your time in any number of ways. You can support it with a donation in memory of a bluebirder who has touched your heart.

I will make only one promise. Looking across the borders, gaining a wider perspective of bluebird conservation will only enhance the simple pleasures derived from peeking into a nest box or watching a bluebird fledge. May the bluebirds of happiness be forever present in our hearts, in our neighborhoods and across the continent.

Presidential Postscript: Please take note that you are being given a choice as to who will serve as the next NABS president. Take the time to carefully read the biographical sketches on the two candidates (page 5) and make your choice. The ballot enclosed is an ABSENTEE ballot to be used only by NABS members who will NOT be attending the 26th Annual Conference in Nebraska.

From the Executive Director

Lisa Bulick

For those of us in the cold North, it's hard to believe nesting season will ever be here again. So I'm thinking about the things we do for bluebirds when we're not out monitoring our nest boxes.

Throughout the year, NABS members do so much to support bluebird conservation. There are more than 40 affiliate organizations across Canada and the U.S. working to promote bluebirds, and an active speakers' bureau that provides valuable bluebird education. NABS has its Nest box Approval Process to help educate manufacturers about proper nest box specifications. The Trans-continental Bluebird Trail links trails across the continent and helps increase public awareness of bluebirds. NABS' educational packet assists teachers in educating school children, and our fact sheets and web site provide valuable information pertaining to bluebird conservation.

From my experience, bluebirders relish the opportunity to talk about bluebirds. Many NABS members have mentored young people and helped them develop a love of bluebirds and a desire to protect them.

Melissa Miller, of Hartville, Ohio took a top prize at the Ohio State Fair for her cavity-nester project. Janette Donahue, a Senior Girl Scout from New Hampshire, recently received the Girl Scout Gold Award for her bluebird trail project. And there are dozens of young people like Melissa and Janette working to promote the conservation of our native bird species. There are probably kids in your community seeking opportunities for contributing to conservation efforts.

If you're interested in passing on your love of bluebirds to young

people, you might give a gift membership to a 4-H group or a Boy or Girl Scout troop — student memberships are \$15 and a great way to introduce a young person to bluebirds and bluebird conservation. If you want to reach a larger number of people, share *Bluebird* with your local school or public library, by purchasing a gift membership or donating your back issues, or both.

There are other great ways to support NABS and bluebird conservation. Many employers maintain funds for matching employees' charitable donations. NABS memberships are great for hard-to-buy-for people on your gift lists. A NABS gift membership is perfect for bird lovers on Mother's Day, Father's Day, Grandparents' Day, birthdays, anniversaries, special occasions and holidays.

The Lawrence Zeleny Giving Circle and the NABS Endowment Fund were established in 2000. Named for the founder of the North American Bluebird Society, the Zeleny Circle is an endowment established to create a financial base that will support the work of NABS for bluebirds and other native cavity-nesting species well into the future.

You may join the Zeleny Giving Circle with a gift of \$5,000 in a single payment or by pledging \$1,000 a year for five years. Zeleny donations are put into the endowment fund. NABS is always grateful for your contributions to the Endowment Fund.

Your support of NABS over the years has helped us to continue the work and the dream of Dr. Lawrence Zeleny and other pioneers in the field of bluebird conservation. We appreciate all the ways bluebirders contribute to the cause of protecting our native birds.

Bluebird

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The NABS web site offers answers to many questions.

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For advertising information, contact the executive director.

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Bluebirds and cranes

NABS 2003 convention, Kearney, Nebraska

Bluebirds will share the landscape with hundreds of thousands of migrating Sandhill Cranes and geese during the 2003 annual convention of the North American Bluebird Society. Members will gather in Kearney, Nebraska, March 20-23 for the meeting.

Kearney is located along Interstate 80, just north of the Platte River at the point where migrating cranes mass to feed and rest as they move north to nesting grounds. The cranes here create one of the true birding spectacles in North America.

This conference is being planned and presented by Bluebirds Across Nebraska.

The Holiday Inn Hotel and Convention Center will be conference headquarters. A block of rooms has been reserved at the Holiday Inn, the Wingate Inn, and Hampton Inn. Please mention the NABS convention when you register.

Reservations at these motels or at other accommodations in the area and for the convention itself should be made as soon as possible. The crane migration attracts thousands of birders from around the world. Rooms can be hard if not impossible to find at the last minute. (See list of motels and telephone numbers.)

A registration form is included with this issue of *Bluebird*. Pull it out and register today.

NABS catalog on-line with new products

The NABS catalog, being distributed by Jenna Bird, is constantly adding new bluebirding products. Visit our on-line catalog at www.nabluebirdsociety.org today. You can receive a free product listing of our products by calling 410/452-8448 or e-mailing jennabirds@aol.com. We now carry a wide variety of nesting boxes, mealworm feeders, mealworms, and other bluebirding items at a very reasonable price. NABS members also receive a member discount.

Fall 2002 cover photo

The cover photograph for the Fall 2002 issue of *Bluebird*, the Budgerigar at the nest box, was taken by Peter Weber of Rochester, Illinois. We failed to give Mr. Weber credit in that issue.

Minnesota conference

The 2003 conference of the Bluebird Recovery Program, Audubon Chapter of Minneapolis, will be April 13 in North Branch, Minnesota.

Hotels and motels

Holiday Inn — 308/237-5971 or 800/465-4329
Hampton Inn — 308/234-3400 or 800/426-7866
Wingate Inn — 308/237-4400 or 800/228-1000
AmericInn — 308/234-7800
Best Western Inn of Kearney — 308/237-5185
Midtown Western Inn — 308/237-3153
Budget Dollar West/RV Park — 308/237-5131
Budget Motel South — 308-237-5991
Comfort Inn — 308/237-5858 or 800/228-5150
Country Inn & Suites by Carlson — 308/236-7500 or 800/456-4000
Days Inn Motel — 308/234-5699 or 800/325-2525
Fairfield Inn — 308/237-0838 or 800/228-2800
First Inn Gold — 308/234-2541 or 800/652-7245
Holiday Inn — 308/237-5971 or 800/465-4329
Holiday Inn Express — 308/234-8100 or 800-Holiday
1st Interstate Inn — 308/237-2671
Motel 6 — 308/338-0705
Ramada Inn — 308/237-3141
Super 8 — 308/234-5513 or 800/800-8000
Western Inn South — 308/234-1876 or 800/437-8457
Western Motel — 308/234-2408

Campgrounds

Budget Dollar — 308/237-5131
Ft. Kearny State Recreation Area — 308/865-5305
Clyde & Vi's Campground — 308/234-1532

Bed & Breakfasts

Park 5th Avenue — 308/237-3310 or 800/440-3886
Woodland Park — 308/236-9279



*Drink
shade
coffee.
It's good
for the birds.*

Four officers, four directors to be named

Two NABS members are standing as candidates for president of the organization. Members will vote for one of these candidates plus unchallenged candidates for vice-president, treasurer, secretary, and four director positions. Please take note that NABS members are being given a choice as to who will serve as the next NABS president. Please take the time to carefully read the biographical sketches on the two candidates. As per NABS constitution and by-laws, the election of all officers and board members will take place at the annual meeting to be held in Kearney, Nebraska, March 22, 2003.

Six other NABS positions will be filled by candidates who are unopposed

in this election. Two are incumbent officers: **Anne Little**, treasurer, and **Darlene Sillick**, secretary, both are seeking second terms in their offices.

Steve Garr of Mt. Juliet, Tennessee, is unopposed as candidate for vice president. He is founder and president of Tennessee Bluebird Trails, a NABS affiliate. He is a NABS life member and a member of the organization's board of directors. He serves as chair of the membership committee.

There are four candidates for four positions open on the NABS board of directors. They are:

Phillip Berry of Gulf Breeze, Florida, a retired college professor and avid birder. He maintains a

bluebird trail at Tiger Point Country Club in Gulf Breeze.

Fawzi Emad of Laytonsville, Maryland, holds the position of Professor Emeritus in Electrical Engineering at the University of Maryland. He monitors bluebird trails near his home.

Bruce Macdonald of Harrow, Ontario, is a semi-retired business owner and marketing professional. He monitors trails in Essex County in southwestern Ontario.

Tena Taylor of Calhoun City, Mississippi, is the founder of Mississippi Bluebirds, one of the newest NABS affiliates. She maintains a bluebird trail in rural Calhoun County.

Here are biographies of candidates for president

Sherry Linn

Osoyoos, British Columbia

In the spring of 1974, I saw my first Mountain Bluebird and, in my excitement, immediately called my parents who lived 250 miles away! I had been an avid birder for some years but that sighting will always remain a vivid memory. It would take 20 years until I saw a bluebird again.

At that point I learned of the Southern Interior Bluebird Society (SIBTS) which I joined. I put up eight nest boxes (now over 20) and was blessed with both Mountain and Western bluebirds nesting on my property. The rest, as they say, is history.... I was hooked.

That fall of 1995 I was on the board of directors of SIBTS, and this month I completed my fourth year as president. I now serve as past president. My role within SIBTS includes: producing the newsletter, building and maintaining the membership database, compiling the nest box data annually,

manning displays, handling requests via mail, e-mail and phone, speaking to schools and groups about bluebird conservation, representing SIBTS in its affiliation with NABS and several local and provincial environmental groups.

I served as an active committee member for hosting the NABS 2002 Convention, and took on the role as treasurer for the event. Under the NABS umbrella, I have attended the past five conventions, and serve on the Convention Committee. I am a member of the Speaker's Bureau and previously was on the Education Committee. I was honored to receive a 2002 NABS Bluebird Conservation award.

I have been a naturalist most of my life and am working as an interpreter and guide at Nk'Mip Desert and Heritage Centre, educating people of all ages about endangered ecosystems of the South Okanagan, plants and wildlife on site, and native culture.

Nk'Mip is sponsoring a three-to-five year scientific study of Western Rattlesnakes on site. I am an active member of the team — capturing, collecting data (location, weight, measurements, sex) inserting microchips, releasing the snakes, and completing the data entry into a database. My job also includes developing future interpretative programs for the Centre.

Ducks Unlimited is another of my interests. I have been a member of the local Committee for over five years and have co-chaired the children's Greenwing Program for the last three years. Other organizational experience includes terms serving on the board of the South Okanagan Rehabilitation Centre for Owls (director & treasurer) and the Golden Retriever Club of BC (secretary, newsletter and treasurer). Since 1997, I have been involved in the St. John Ambulance Therapy Dog Program visiting nursing

Continued on page 6

– statements by candidates

Continued from page 5

home and hospital extended-care facilities with my Golden Retrievers.

My work career included 20 years in the communication industry, mainly in management, in Vancouver and Ottawa. Some of the areas of responsibility included: Forecasting and tracking sales results, developing compensation plans, managing clerical teams, training and supervising staff, developing and working to budgets, developing and delivering customized customer training packages on services and products.

**Dean E. Sheldon, Jr.
Greenwich, Ohio**

Birding since childhood, bluebirding since 1981, Dean Sheldon has been a member of NABS since 1987. A founding member of the Ohio Bluebird Society, he has held many positions of responsibility within that group including a term as vice-president and several terms as a member of the board. Annual meeting coordinator for eight years, he was the program chairman for the NABS 2001 Annual Convention in Columbus.

A regular columnist in the OBS 'Bluebird Monitor,' he has contributed over 30 "Ohio Blue Tip" articles on beginning bluebirding and trail management to that publication. Many of these articles have subsequently been re-printed in NABS' affiliate newsletters. His writings have appeared in both *Sialia* and *Bluebird* as well as in other publications. He has participated in countless bluebird/cavity nester workshops and has been a speaker at several affiliate annual meetings.

Increasingly active in NABS since 1995, he was a board member from 1997 through June, 2001. His responsibilities have included active participation as a member of the following committees: Affiliation, Convention, Nominating, Technical Advisory, and

Web site. He has also served as liaison in the partnership between NABS and the Cornell Lab of Ornithology.

Much of his activity has been devoted to the creation of a new and modernized organization for NABS, including:

- work on development of a Convention Handbook to assist affiliate host;
- committees in their planning/administration for NABS' Annual Conventions. Worked on securing locations for future conventions;
- review of the Jones' Report membership recommendations as they pertain to affiliate relationships;
- extensive work with others over a five year period to re-write and modernize NABS' Constitution/By-Laws. Also re-worked all committee descriptions/statements of responsibility;
- assisted, as a committee member, in the modernization of the nominating procedures for the NABS' elections process;
- as a member of the TBT Committee, worked extensively on developing a new research component for the society.

His vision of affiliate groups for NABS was approved by the board in the mid-1990s. Since that time, Sheldon has advised and assisted groups in 12 states in their efforts to become NABS' affiliates.

With his family, he maintains a registered Tree Farm and wildlife conservation area in Huron County in north central Ohio just south of Lake Erie. Additionally, he monitors over 100 nest boxes on four trails in three counties in that part of the state. These trails produce about 500 Eastern Bluebird fledglings in a normal nesting season.

Professionally, he has worked as a city planner, urban renewal coordinator, city manager, park district direc-

tor, and instructor in natural resources management. He holds an AB degree in English from Dartmouth College and the Master of Public Administration degree from the University of Michigan.

Among his other awards, he was presented the Silver Beaver Award for service to Scouting. He also holds the Hornaday Conservation Award from the Boy Scouts of America. Sheldon received the NABS' Bluebird Conservation Award in 1994.

Urban bluebird success story

By Frank V. Budney

In 2000, the Friends of Lenape Park established a bluebird trail at Lenape Park in a cooperative effort with the Union County (New Jersey) Department of Parks and Recreation. We hoped to establish a breeding population of Eastern Bluebirds in an urban environment.

The 387-acre park is located along the Rahway River in Cranford. Most of the park is forested wetlands.

In February of that year, five NABS-style boxes were installed in a two-acre wetland field. In 2001, four more boxes went up. Seven are mounted on single posts while the remaining two boxes are back-to-back on a single post.

The first two years produced no nesting bluebirds. Tree Swallows nested both of those years. In March of 2002, a pair of Eastern Bluebirds established a nest for the first time in recent years at Lenape Park, and successfully raised two broods with a total of five fledglings.

Urban habitats can support a diverse number of birds species, including bluebirds. Up to 20 Bluebirds winter over at Lenape park so we feel our efforts to establish nest boxes is worth the effort.

(Mr. Budney is trail coordinator.)

SUBSPECIES

Science recognizes eight subspecies for Eastern Bluebird, six for Western, none for Mountain

By Jim Williams

Bluebirds, like many other bird species, come in a variety of subspecies. This means there are definable plumage and / or other physical differences between regional populations of the same bird species.

Ornithologists recognize eight subspecies for Eastern Bluebird and six for Western Bluebird. There are no recognized subspecies for Mountain Bluebird.

Subspecies are presumed to be able to interbreed freely with other members of their species if given the opportunity, according to Christopher Leahy in his book *The Birdwatcher's Companion*. He explains that concept of subspecies "is an invention of taxonomists and not a natural biological entity. The term allow for description and discussion of variation within species."

Leahy says subspecies represent early stages in the process that leads to creation of new species.

The word race often is substituted for the word subspecies. Thus, there are eight recognized races of Eastern Bluebirds. While a bird species has a scientific name of two parts (*Sialia sialis* for Eastern Bluebird, *Sialia mexicana* for Western Bluebird, *Sialia currucoides* for Mountain Bluebird), subspecies are given a third name; it identifies the race.

Here is a summary of the known bluebird subspecies.

Characters used to diagnose the various subspecies are based chiefly on coloration, according to the source for this information (see below). This requires comparison of specimens in fresh plumage. Lack of a pre-



alternate molt (see page 8) in this species results in very worn birds in spring and summer, making analysis difficult in some cases. Some subspecies seem weakly differentiated; some require better characterization, using fresh material and larger sample sizes.

Eastern Bluebirds (*Sialia sialis*)

S. s. sialis: Breeds in eastern North America south to east-central Coahuila in Mexico; winters southward within range and to Bermuda, northern Mexico, Cuba, and casually to Arizona. Small, dull dark rufous to chestnut below; males dark purplish blue, without chestnut edging on back-feathers. Includes "episcopus" of s. Texas.

S. s. bermudensis: Resident in Bermuda. Said to be darker and deeper red below; males brighter (not purplish) blue above. Considered identical to the nominate *sialis* race by some. (Nominate refers to the species race to which other races are compared.)

S. s. grata: Resident in s. Florida north to about Lake County. Bill longer than *S. s. sialis*, also possibly somewhat deeper and wider than *S. s. sialis*. Considered doubtfully distinct by Phillips (1991), who noted long bills on birds from North Carolina and Tennessee. Not recognized by all authorities.

S. s. nidificans: Resident on Mexican Gulf slope of mountains from southwest Tamaulipas to central Veracruz. Similar to nominate *sialis*, but slightly larger and more richly colored below; males show chestnut edging on back-feathers when fresh.

Continued on page 8

Photograph of female Eastern Bluebird by Hubert Brandenburg

— subspecies

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S. s. fulva: Resident from south-central and southeast Arizona south through pine and pine-oak regions of Mexico north of Isthmus of Tehuantepec and west of *nidifican's* range. Large and relatively pale; underparts light rufous cinnamon and contrasting less than *S. s. sialis* with white of lower belly; female most brownish on upper parts as compared with other parts of her body.

S. s. guatemalae: Resident in mountains of Chiapas (Mexico) and Guatemala. Large; female paler than *fulva* below and with more blue above (including crown); male may be more reddish tinged than *fulva* below.

S. s. meridionalis: Resident in Honduras, northern El Salvador, and mountains of Nicaragua. Large, but smaller than *guatemalae*; more reddish below; female more blue above. Considered part of *guatemalae* by J. D. Webster, author of "Middle American races of the Eastern Bluebird," *The Auk* 90: 579-590. Assignment of birds in Belize uncertain; either this or *guatemalae*.

S. s. caribaea: Resident in lowland pine savanna of northeastern Nicaragua and eastern Honduras. Smallest and palest of all subspecies (female). Wing length generally less than 97 mm; that of adjacent highland populations generally more than 97 mm (only slight overlap).

Western Bluebird (*Sialia mexicana*)

Six subspecies recognized by A. R. Phillips in his 1991 paper "The Known Birds of North and Middle America, Part II," which is the only recent taxonomic treatment of the species. Validity of subspecies considered tentative; modern assessment is needed. Although some regional differences exist, much

Pre-alternate molt

Bluebirds do not have a pre-alternate molt of feathers. For those bird species that do, this molt is partial, beginning replacement of basic (non-breeding) plumage with the what is called alternate (or breeding) plumage. Some bird species, particularly the males of these species, have brighter feathering during the breeding season than at other times of the year. The prealternate and alternate molts accommodate that change.

The slight seasonal change in appearance of bluebirds, which you might recognize, comes not from an additional molt but from feather wear. Bluebirds undergo a complete molt at the end of the breeding season. The new feathers have pale or dull-colored edges, causing fall and winter plumage to appear less bright. By spring, feather wear has removed those edges, giving the birds a brighter look.

variation is found within each breeding population, making it difficult, for example, to identify point of origin for some wintering birds.

Sialia mexicana occidentalis: Breeds (partially resident) along Pacific slope of species' range from southern British Columbia south to northern Baja California, within the interior to northern Idaho, northwestern Montana, and Nevada. Male with chestnut on back occasionally broad, usually narrow medially, and usually present on anterior scapulars; blue coloration averages relatively pale (paler than *bairdi*); size averages a bit smaller than adjacent subspecies.

S. m. bairdi: Breeds in interior mountainous regions of western North America from south and central Utah and Colorado south to south Sonora and northwestern Chihuahua and southeast to southwestern Texas; winters at lower elevations of breeding range into central Texas, southeastern California, and eastern Sonora, Mexico. Male with chestnut on back extensive and including lower scapulars; female more rufescent above than *occidentalis*; size averages larger.

Birds of southwestern Colorado possibly distinct, being duller, less reddish on back (especially females), and paler on breast than other *bairdi* (Phillips 1991).

S. m. jacoti: Resident Davis Mountains (southwestern Texas) and San Luis Mountains at Sonora-Chihuahua-New Mexico border. Relatively dark and dull race; back of female without reddish tones and back of male more chocolate than *bairdi* or *occidentalis*; less blue medially than nominate *mexicana* with crown pale.

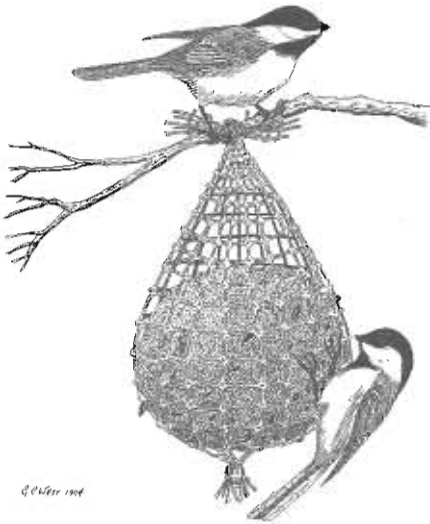
S. m. amabilis: Resident in mountains of northwestern Mexico from southwestern Chihuahua to northwestern Zacatecas. Extensively chestnut on back; blues darker.

S. m. nelsoni: Resident in mountains of northeastern and central Mexico from northern Coahuila to western San Luis Potosi, northern Guanajuato, and northeastern Jalisco. Reduced (obsolete or lacking) chestnut on upper parts, blue most extensive of subspecies; breast cinnamon-rufous; size averages small.

S. m. mexicana: Resident from Mt. Orizaba (Veracruz/Puebla) north to northern Puebla and Hidalgo and west

to Michoaccin and Aguascalientes. Extensively chestnut on back (but less than *amabilis*); crown deep blue; averages large.

(Information for this article was taken from monograph series published as The Birds of North America, supported by the American Ornithologists' Union, Cornell Laboratory of Ornithology, and the Academy of Natural Sciences. The monographs used were Mountain Bluebird, series No. 222, by Harry W. Power and Michael P. Lombardo; Eastern Bluebird, No. 381, by Patricia Adair Gowaty and Jonathan H. Plissner; and Western Bluebird, No. 510, by Judith A. Guinan, Patricia A. Gowaty, and Elsie K. Eltzroth, the latter a NABS board member. Individual monographs may be purchased from Buteo Books for \$7.50 plus postage (\$4 for the first volume, \$1 for each additional). Buteo can be reached at 800/722-2460 or e-mail allen@buteobooks.com.)



Black-capped Chickadees taking black oil sunflower seeds from a mesh-bag feeder. (Drawing by Dr. George West, Green Valley, Arizona.)

Vaux's Swifts continue to use nest boxes

By Evelyn L. Bull

The shortage of natural nesting habitat in the form of hollow standing trees in the Pacific Northwest was the impetus behind a study looking at the feasibility of putting up nest boxes for Vaux's Swifts. A decrease in the number of large-diameter hollow trees that this species uses for nesting has resulted from a history of harvesting mature stands where the oldest trees were removed, in addition to more recent insect outbreaks and tree diseases that killed many of the oldest trees.

Originally, 12 nest boxes of three sizes were put in trees in 1996 to see if Vaux's Swifts would even use nest boxes. Within two years, swifts had nested in three of the nest boxes. The boxes that were used most often were made of rough-cut lumber, and were about a foot square and 12 feet in depth. Once we ascertained that swifts would use the boxes, we put up an additional 100 boxes to determine how successful the swifts were in nesting.

Each year from 1999 through 2001, there have been 12 to 17 swift nests constructed in the nest boxes. Nest success in the boxes has ranged from 31 to 67 percent.

There is some concern regarding the low nest success, particularly for a cavity-nesting species, although nest success in natural situations (i.e., hollow trees) is unknown. A potential problem with nest boxes may be overheating where the temperatures may become lethal for embryos. We

are investigating this situation with data loggers that will record the air temperature inside the box at one-hour intervals.

Another potential problem with nest boxes is their visibility and the fact that predators may develop a search image for the boxes. Natural cavities in hollow trees are less visible and more abundant than boxes. A mammalian predator would spend more time searching for cavities in trees than one that was checking nest boxes.

None-the-less, nest boxes do provide nesting habitat for Vaux's Swifts. In addition, they provide an opportunity to determine nest success and brood size, information previously largely unknown due to inaccessibility of hollow trees. Further research will continue to monitor nest success, fledgling numbers, and the influence of external temperature and predation.

(Ms. Bull is a research wildlife biologist at the Pacific Northwest Research Station in La Grande, Oregon. Her article originally appeared in the Spring 2002 issue of *Cheatura*, the newsletter of the Driftwood Wildlife Association. DWA is a non-profit volunteer organization promoting research and providing community education about wildlife rehabilitation and avian natural history, with a particular interest in the swift family of birds. It can be reached by writing Driftwood Wildlife Association, 1206 West 38th, Suite 1105, Austin, TX 78705..)



What are those birds doing in there?

Using the number of visits to the nest by parents as a measure of food delivered to nestling Tree Swallows

By John P. McCarty

The rate at which parents deliver food to their offspring in the nest is critical to understanding a wide range of questions about behavior, ecology, and reproductive strategies in Tree Swallows and other bird species. In most field studies, we count the number of visits parents make to the nest and assume that parents deliver food in similar amounts on each visit. However, for cavity-nesting birds such as Tree Swallows, it is difficult to tell from a distance if parents are carrying food, and what parents do once they enter a nest is not generally known.

In this study, using Tree Swallows breeding in nest boxes near Ithaca, New York, I tried to determine whether we could learn about the quality of parental care by simply watching the behavior of parents. First, I examined whether parents actually fed nestlings when visiting the nest by videotaping interactions between parents and nestlings in nest boxes. Second, I collected samples of the food parents brought nestlings to look for differences in the amount of food delivered during each visit.

The reliability of using the number of visits to the nest as a measure of nestling feeding activity was tested by video-taping the interior of nest boxes during parental visits. Video cameras were mounted to record the interiors of modified nest boxes with plexiglass on one side. By reviewing tapes made during the nestling period, I was able to see if parents fed nestlings when they entered the nest box.

To test whether the amount of

food parents brought to the nest was consistent among adults, I collected samples of the food they were bringing to nestlings. When adult Tree Swallows are feeding their nestlings they collect a ball of insects held together with saliva (called a bolus) before returning to the nest. These insect boluses were taken from adults captured as they returned to the nest, and by using an artificial nestling puppet placed inside the nest. The insects in each bolus were later identified and measured.

Behavior of tree swallows inside the nest box was recorded on videotape at five nests over 16 observation periods. Nestling age at the time of observation ranged from four to 20 days. A total of 132 nest visits were recorded during the observation periods, giving a visitation rate of 18.2 visits per hour. Feeding was confirmed on 126 of the 132 visits and probably occurred during three additional visits.

This confirms that counting the number of visits to the nest box is a good indicator of how much food parents are providing their young. While this is true for Tree Swallows, other species may behave differently. For example, in Cliff Swallows, parents that are unable to find food will return to their nest without feeding their young. They then wait until one of their neighbors returns with food and then leave and follow their more successful neighbors back to the source of insects.

The amount of food delivered during visits was based on analysis of 214 food boluses. Each bolus con-

tained an average of 18.1 insects and averaged 24.1 mg dry mass (less than one thousandth of an ounce). Most of these insects adults brought back were small flies and bugs (diptera and homoptera), though adults also captured larger insects such as dragonflies and damselflies (odonata). The size of load the parents carried back to the nest did not change as nestlings got older. Likewise, the size of the load parents carried was not dependent on the number of nestlings they were feeding. Male and female parents collected equally large boluses of insects.

The average bolus mass found at Ithaca (24 mg) is similar to findings of other studies. A mean of 28 mg was reported for Tree Swallows in Ontario and 30 mg per bolus at an upland site in Michigan. However, the mass of boluses delivered was found to be larger in a study in Alberta, ranging from 37 to 54 mg, suggesting that additional attention to this variable is needed when comparing sites that differ in food availability.

Overall feeding rate based on 195 nest observation periods averaged 14.5 visits per hour, slightly lower than the rate at nests recorded on video. While male and female parents delivered similar amounts of food during each feeding visit, females made a significantly larger share of the total visits to the nest (62.5%) than did males. At eight nests, I watched parental behavior over the course of an entire day. In general, feeding rates were highest before 10 a.m., but parents fed at high rates

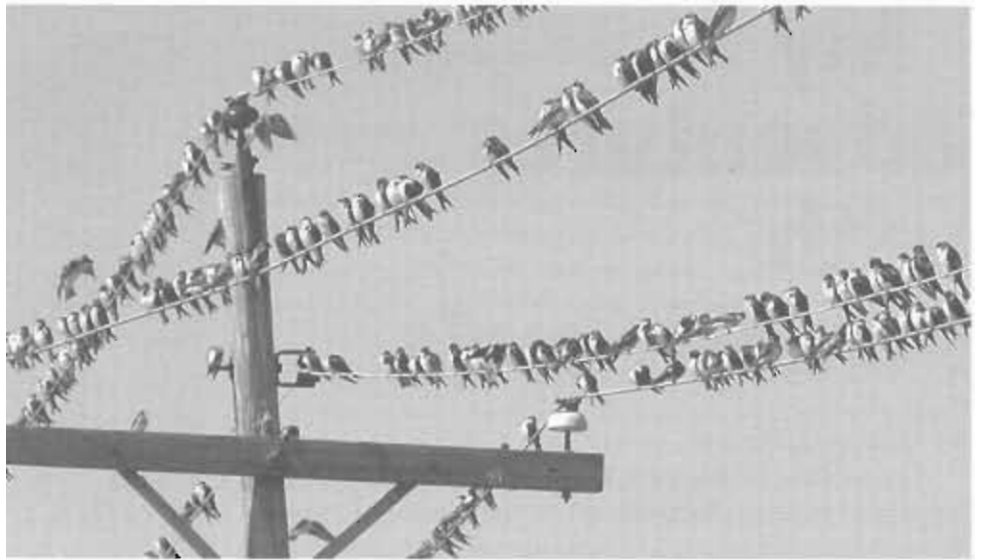
throughout the day. This pattern is typical of most songbirds, where feeding rates are high early in the morning and again before sunset. On average, a parent visited its nest 22.7 times every hour, with a maximum of over 50 trips per hour.

The feeding ratio for males and females in this study is not indicative of all Tree Swallow populations, however. Several studies of Tree Swallows in Ontario have reported that males and females feed their young equally. This difference may be related to the quality of foraging habitat available, with males decreasing their care when food becomes more abundant.

During the time between these visits, parents have to catch insects at a very high rate. Each bolus or ball of insects contained an average of 18.1 insects yet weighed very little. An adult Tree Swallow needs to collect about 750 insects to provide one gram (1/28 oz.) of food. Based on the food needed for an average family of five or six young swallows, this result means that the parents will need to capture over 6,000 insects every day.

The amount of food parents bring their nestlings depends on; 1) the number of feeding visits made by the parents, and 2) the amount of food delivered on each visit or load size. In field studies of cavity-nesting birds such as Tree Swallows, the number of visits is typically used as an index of parental care and food delivery. This assumes first that food is actually delivered with each visit, and second that no systematic differences in load size are present.

The results presented here show that, while variation in load size may introduce variation into estimates of the amount of food delivered, in most cases the use of visitation rates as a measure of the amount of food parents deliver is justified.



Tree Swallows on Long Island, New York, mass for fall migration. (Photograph by Howard Boltson, East Northport, N.Y.)

Acknowledgements

This research was supported by grants from the North American Bluebird Society, the American Museum of Natural History F. M. Chapman Fund, and the Cornell Laboratory of Ornithology. I thank Jim Williams of *Bluebird* for help adapting the original article for publication, and Charles Brown, editor of *Journal of Field Ornithology*, for permission to reprint this information.

(Dr. McCarty is a member of the Department of Biology at the University of Nebraska at Omaha. This paper is adapted with permission of the publisher from McCarty, J. P. 2002. The number of visits to the nest by parents is an accurate measure of food delivered to nestlings in Tree Swallows. Journal of Field Ornithology 73:9-14. Dr. McCarty can be reached at the Department of Biology, AH514E, University of Nebraska at Omaha, 6001 Dodge St., Omaha, NE 68182-0040.)

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My adventures with screech-owls

By William J. Parker

The summer I completed the eighth grade, tending my nest-box trail again, I grew bored with bluebirds, titmice, and chickadees. I yearned for something totally out of the ordinary. What about screech-owls? Although I had never had any personal experiences with boxes for screech-owls, the idea presented the challenge I wanted.

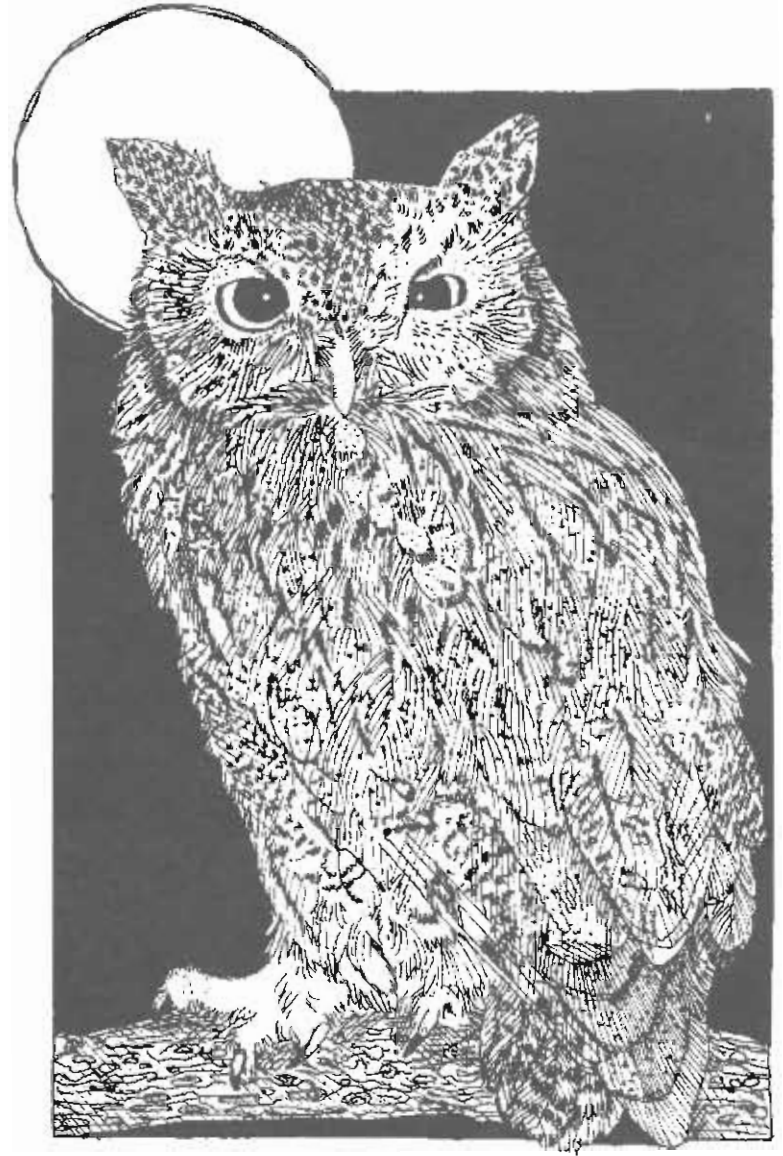
That winter, I built and erected six screech-owl nest boxes. Two years later, I enjoyed my first up-close-and-personal encounter with Eastern Screech-Owls when two pairs nested in my boxes. Many years have passed since that memorable spring morning and I still get excited whenever I see a screech-owl, knowing it may well have been reared in one of my own boxes.

Like bluebirds, screech-owls are secondary cavity nesters. They are not capable of excavating their own nest holes, and therefore depend on pre-existing cavities for nest sites. Habitat loss due to clear-cutting and the removal of dead or dying trees has left few, if any, natural cavities in many areas. Faced with this dilemma, hole-nesting birds are forced to seek new territories and nesting cavities.

As a result, screech-owls may be scarce or absent in places where they once flourished. Nest boxes, therefore, can play a major role in screech-owl conservation and management.

Starting a screech-owl nest box trail requires some preliminary planning. Become familiar with the areas in which you wish to set out nest boxes. Look for obvious natural cavities with openings more than three inches in diameter. Since most cavity nesters prefer natural cavities to artificial ones, it is best to place nest boxes in areas where natural cavities are scarce or nonexistent. This greatly increases the chances of screech-owls accepting them as nest sites.

Nest boxes should be in place by mid-to-late February in the deep south and no later than mid-March in areas farther north. I have found that swamps and deciduous woods are among the screech-owl's favorite haunts,



although orchards, farm woodlots, and stream edges also are desired habitats. Residential areas and backyards with large shade trees are another option. In more western locales, nest boxes may be readily accepted in drier, desert-like regions.

Erecting nest boxes in ideal screech-owl habitat is no guarantee that they will be available to the birds all of the time. Flying squirrels and the much larger gray and fox squirrels are known to occupy nest boxes from time to time. Screech-owls simply evict flying squirrels from cavities they wish to use. The larger squirrels are a more serious threat, as they are known to fiercely compete with screech-owls for nest sites.

Although nest boxes may be available for use by screech-owls, they may not be accepted as nest sites. They may, however, be used for roosting. On cold or rainy nights, screech-owls may use a nest box as a refuge in which to eat prey. The fact that a screech-owl has never been observed in or around a particular nest box does not necessarily suggest that none has visited it in the past.

Nest boxes should be mounted at least 10 feet from the ground on an area of the trunk of the tree that is free of branches. Placing a nest box among branches interferes with observing or photographing inside the nest cavity. The boxes also should be placed on trees where they can be approached from either side as well as from the front. Approaching a box from the side enables an individual to avoid possible direct contact with a squirrel or cavity-nesting bird that may be exiting the box. Mounting nest boxes on metal poles or on trees in more open areas may somewhat deter squirrels from inhabiting them. Boxes should be placed at a minimum 100 yards apart.

Other cavity-nesting species such as Northern Flickers, Tufted Titmice, Great-crested and Ash-throated flycatchers, European Starlings, and American Kestrels occasionally find screech-owl boxes to their liking. Excluding starlings, these are highly desirable native species that should be welcomed. One should become familiar with and learn to identify the nest and eggs of these cavity nesters as well as others.

Many individuals do not have access to land on which to place nest boxes. Seek permission from other landowners. Give a thorough explanation of the project you are involved with and what you wish to do. Once landowners have a clear understanding of your agenda, most will be willing to help.

Female screech-owls never should be picked up or removed from the nest cavity for the purpose of viewing or photographing eggs or young. Owlets should be left undisturbed as well.

Signs of past visits to a nest box include owl pellets, feathers and/or fur and feathers of prey.

Screech-owls, like most other birds of prey, begin nesting (egg-laying) in late winter or very early spring, usually in March. In the northern portion of their range, they may begin nesting as much as two weeks later than their southern counterparts. Since they have defined territories, and are permanent residents, they frequently return to the same cavity year after year.

While most cavity nesters construct some variation of a cupped nest on the floor of the cavity, screech-owls build no nest. Since nest boxes often attract squirrels and other cavity-nesting birds, they may be partially filled with leaves, twigs, and other debris. This does not discourage owls from accepting that nest box as a nest site. Females simply lay their eggs on top of whatever materials are present.

The eggs of most cavity nesters are oval in shape, laid one a day until the clutch is complete. In contrast, screech-owl eggs are nearly spherical, and are deposited at intervals of up to two to three days. A clutch may number from two to six pure white eggs, although three to five is the norm. In rare instances, two females belonging to one male may lay in the same cavity.

Females assume all of the incubation duties. Since an incubating female only leaves the nest at dusk or dawn, the male brings food to her at night. While in the act of incubating or brooding, the female generally sits tight, thus making it difficult to view the eggs or young.

Incubation requires four weeks and may begin after the first, second, or third egg is laid. Such behavior, coupled with the extended intervals during which eggs are laid, usually results in various-sized young in the nest. Often this seems to have little or no impact on reproductive success or on interactions among siblings. Intense competition for food rarely exists between nestling screech-owls as it does in many other raptors, but older chicks may eat their younger siblings if food is scarce.

In the early phases of courtship and nesting, male screech-owls often accompany their mates inside the nest cavity during the day. I often find males sitting at the mouth of the cavity for extended periods while the female is incubating. This type of behavior rarely occurs among other cavity-nesting species. Nest defense is one possible explanation for this particular behavior, although mate-guarding may be a more accepted reason. The male may be protecting his rights to his chosen mate by warding off other suitors.

Screech-owls are fearless in and around the nest cavity. At night, they will defend it at nearly all costs. Other cavity-nesting species such as bluebirds, Purple Martins,

House Wrens, and chickadees usually exit the nest cavity upon an intruder's close approach. Screech-owls, however, less often leave the cavity or appear at the entrance hole when the outside of the cavity is tapped. At night, a human being or any other unwelcome intruder venturing too close to the cavity is almost sure to be the recipient of a blitzing attack.

Such an attack is often forewarned by dives and flybys after which the screech-owl pair generally proceeds with a physical assault if the warning goes unheeded. Target areas include the head, face, and neck of the would-be intruder. Defense of the nest greatly increases after the eggs hatch and throughout the pre-fledgling stage of the young.

After hatching, young screech-owls commonly are brooded for about one week. This time period may be extended during wet or unseasonably cold weather. As the owlets begin to control their own body temperatures, they require less brooding. The female generally remains in the nest cavity until the young are approximately three weeks old. Owlets usually leave the nest at three and one-half weeks to a month old and may or may not exit the cavity according to hatching order.

Once out of the nest, the young are fed by adults until they learn to hunt on their own. This occupies a period of about one month after fledging, but the family may remain in the nesting territory for eight to 10 weeks. Invertebrates such as beetles, moths, earthworms, and grasshoppers make up the bulk of the screech-owl's diet, although frogs, snakes, lizards, crayfish, salamanders, mice, and small songbirds sometimes are taken.

Although observing nesting birds at critical stages in the nesting cycle should be discouraged, screech owls are mostly tolerant of minimal daytime disturbance, and may be observed at anytime during daylight hours. However, first-year females may be somewhat skittish, especially during the egg-laying phase and the early part of incubation.

Both Eastern and Western Screech-Owls are permanent residents wherever they are found. Their combined range includes the greatest majority of the lower 48 states as well as southeastern Alaska, southern Canada, and northern Mexico. Besides being a small owl with ear tufts, the Eastern appears in two distinct color morphs, and occasionally a brownish intermediate.

In talking with Prof. Fred Gehlbach of Baylor University, who has studied Eastern Screech-Owls with nest boxes continuously for 33 years, I have learned that brown is most often just worn gray plumage. Gray is usually the dominant color morph in more northern areas of the Eastern's range, whereas rufous is generally more common farther south. Dark brown and gray are the most frequent

color morphs found in the western race.

If you enjoy new, exciting, and challenging adventures, screech-owls provide the ultimate opportunity for new experiences. Building and erecting nest boxes for screech-owls is time well spent. Tell a friend or two. Make it a group conservation project. If success does not come overnight, do not become discouraged. Be patient and wait on nature. Continue to monitor your nest boxes, anticipating the pleasure to come.

(William T. Parker has his screech-owl nest boxes near his home in Enterprise, Alabama. His address is 2673 County Road 711, Enterprise, AL 36330.)

Importance of Monitoring

It is not enough to set out screech-owl boxes and feel that your work is done. Many well-meaning individuals build and erect nest boxes only to never visit them again. They adopt a "let nature take its course"

attitude, neglecting their monitoring duties. Monitoring is as important for screech-owls as for any other species.



Winter is the perfect time to make any needed repairs on nest boxes before the breeding season begins. This is also a good time to look for roosting screech-owls or perhaps rid nest boxes of squirrels and their nests. If you find an owl using a nest box as a winter roost, this may be a sign of things to come in the spring, for winter roosts are often used as nest sites. However, by far the most potentially rewarding and exciting time for monitoring is during the nesting season. For me, there is no greater thrill than slowly lifting the top of a top-opening nest box and peeking inside.

Should you discover a screech-owl or another cavity-nesting species inside a nest box, make your visit brief. Limit nest box visits to no more than one per week. Although screech-owls are very tolerant of human beings and are even less prone to abandon their nests, you do not want to overdo it.

You may also want to take notes and keep accurate records of any activity you observe while monitoring your nest boxes. A great deal of satisfaction derived from conservation practices is knowing that one's efforts are paying off.

From the technical literature

These are summaries of articles recently published in ornithological journals.

How does female House Wren choose a nest?

A recent study answers a question about the multiple nests male House Wrens are known to build. The female wren chooses among partial nest constructions, completing the nest that suits her best. Why does a particular nest meet her favor? Kevin P. Eckerle and Charles F. Thompson, working at Illinois State University, found that the significant factor in nest choice by a female was location of the nest. The number of choices the male wren might offer was not as important as the type of vegetation in which the nesting cavity was located. Males occupying territories in open vegetation were mated in less time than males with territories in dense vegetation, according to the study.

And why do male wrens add cocoons to nests?

Another study by the same pair of researchers touched on an oddity of House Wren nest construction: Male wrens frequently add cocoons of various insects and spiders to their nests. It has been suggested that this is done as an ornamental cue for female choice. The researchers compared the time it took to find a mate for male wrens that did and did not add cocoons to their nests. They tested to see if the use of cocoons made the male more attractive to females and therefore increased their reproductive success (indicating males of higher fitness for reproduction), by measuring clutch size, number of young surviving to leave

the nest, nestling weight, condition, and growth rate, and the rate at which adults fed their young. These were potential benefits to females choosing male wrens based on cocoon use. The researchers found that males adding cocoons to their nests actually took longer to find a mate than did males without cocoons in their nests. Furthermore, said the study, "there were no consistent fitness-related benefit for females related to use of cocoons by their mates." The study concluded that the reason for use of cocoons by some male House Wrens remains unknown.

*(This wren information is contained in Mr. Eckerle's Ph.D. dissertation: Eckerle, K.P. 2001. An experimental analysis of the mating preferences of female house wrens *Troglodytes aedon*. Illinois State University, Normal.)*

Chickadee mobbing call is good census tool

Many birdwatchers know that you sometimes can find small mixed-species flocks of songbirds by listening for and walking toward the chatter of chickadees. A recent research project in Canada found that playing a recording of a chickadee mobbing call, the call given when a predator is seen in the vicinity, is a useful censusing tool. The mobbing call works to attract other songbird species in the area. Use of the call was shown to be an effective tool for surveying forest birds during the non-breeding seasons. The study was conducted by Yves Turcotte and Andre Desrochers of University Laval in Quebec. It was published in the *Journal of Field Ornithology* 73(3):303-307.

Boxes near forest edge are not as successful

Barrow's Goldeneyes and Buffleheads are duck species that use cavities for nesting. A recent study compared use of natural cavities and nest boxes by the two species. The study found larger clutch size, lower nesting success, and different major predators for goldeneyes nesting in boxes versus those nesting in natural cavities. The differences were attributed to the location of the boxes and physical differences between boxes and natural cavities. The goldeneye boxes studied were "concentrated in highly visible locations such as trees at water or forest edge," according to the published report. This made them more susceptible to use by more than one female goldeneye and easier for predators to find. "Natural cavities, on the other hand, were often abandoned Pileated Woodpecker cavities, which were more dispersed throughout the forest interior and concealed under dense canopy cover," the report said. Bufflehead were found to use natural cavities closer to the edges. Those nests suffered the same problems as Bufflehead nests in boxes. The work was done by Matthew B. Evans, David B. Lank, W. Sean Boyd, and Fred Cooke of Simon Fraser University and the Canadian Wildlife Service in British Columbia. The paper was published in *The Condor* 104(6):610-619.

When moms favor sons over daughters

By Dr. Linda A. Whittingham

Parents provide care to their young to improve the survival of offspring and, ultimately, their likelihood of breeding as adults. In birds, some parents may favor the larger or earlier hatched young when feeding nestlings.

Recently, a more subtle type of parental favoritism has been discovered. In some cases, parents may favor sons over daughters.

For example, if sons have the potential to produce many offspring, such as occurs when sons can gain several mates at one time (polygyny), then a son may be more valuable than a daughter.

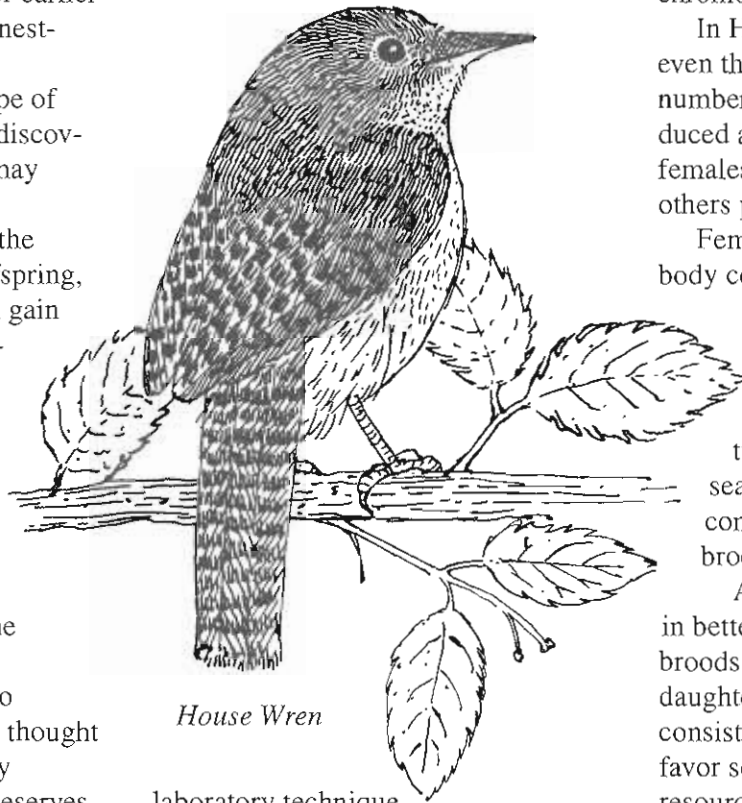
If a son's likelihood of gaining several mates is influenced by how much care he receives from his parents, then it may be beneficial in the long run for parents that can afford to give this extra care to invest more in their sons. It is thought that only parents in good body condition have the energetic reserves necessary to provide this additional care. As a consequence, we expect only the parents (especially mothers) in good condition to invest more in sons.

One way to invest more in sons is to produce relatively more of them. Until recently, it was not thought that female vertebrates could influence the sex ratio of their young, but this idea is also being revised, as several new studies of birds show otherwise.

Because in most species of birds male and female young look the same when they are nestlings and juveniles, studies that examine the sex of young have been limited to a few species in which male and female nestlings differ in size or plumage (e.g. Red-

winged Blackbirds; Bluebirds). These differences allow the sex of nestlings to be determined before the young leave the nest.

However, a recently developed



House Wren

laboratory technique now makes it possible to determine the sex of young in most species of birds from a small amount of DNA. At the University of Wisconsin-Milwaukee, my students, Stacy Valkenaar and Nicole Poirier, and I are using this DNA technique to examine the relationship between female body condition and the condition and sex of the offspring produced by House Wren mothers.

As in many species, young House Wrens of both sexes look the same. We focused on the body condition of the female parent, because in birds it is the female's gamete that determines the sex of the young. Female birds produce eggs with either a male or female sex chromosome (W or Z)

while male birds produce sperm with the same sex chromosome (W). This is the opposite of humans in which all eggs contain an X chromosome and sperm contain either an X or Y chromosome.

In House Wrens, we found that even though there was an even number of sons and daughters produced across the population, some females produced more sons, while others produced more daughters.

Female parents that were in better body condition produced both sons and daughters that were also in better body condition. Females in good condition also were more likely to have two broods during the breeding season, while females in poorer condition produced only one brood.

And finally, females that were in better condition and produced two broods also produced more sons than daughters. Thus, our results are consistent with the idea that mothers favor sons when they have more resources to invest in them.

Other recent studies have found that the condition of the female parent is associated with sex-biased broods in other species of birds such as the Lesser Black-backed Gull and Zebra Finch.

In addition, to the body condition of the female parent, there are other factors that are associated with sex-biased broods. For example, female offspring are more common earlier in the breeding season in raptors, and older female parents raise more sons in Red-winged Blackbirds.

In contrast to House Wrens, the sex of nestling bluebirds can be determined by plumage differences, when nestlings are 13 or more days old, because males have more blue in

the emerging flight feathers.

In Eastern Bluebirds, females tend to produce more daughters than sons within a population, especially earlier in the breeding season.

In Western Bluebirds, the sex ratio of broods does not differ from half males and half females regardless of female body condition, age or time of the breeding season.

(Dr. Linda A. Whittingham,
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Box article brings back childhood memories

Dear Editor,

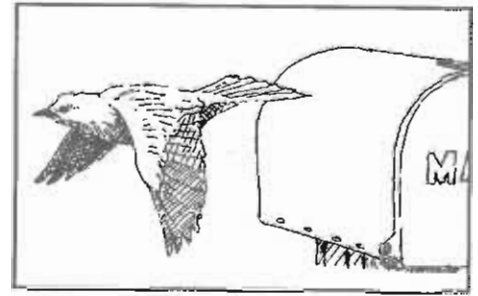
The recent article by Barry Bermudez (*Bluebird*, Spring 2002) about using large entrance holes to discourage House Sparrows from using nest boxes brought back some childhood memories.

When I was about eight years old, I saw a Tree Swallow for the first time. From that moment I wanted to attract swallows to my yard. My dad built a nest box for me and attached it to our garage.

Although he had worked with swallows as a child and knew that sparrows needed to be controlled, he never warned me about the trouble the sparrows could cause. Once I saw that sparrows were competing aggressively for the nest box, he taught me to trap sparrows (with a simple line-triggered deadfall designed to block the box entrance).

I would watch the box for a few minutes from my parents' bedroom window. When a sparrow went into the box, I would run downstairs and through the kitchen where the normal people in my family were eating breakfast. I ran outside to the garage and tried to pull the fishing line in time to block the sparrow's exit with the swiveling piece of wood.

For eight years that technique and an occasional well-placed shot from my pellet gun were used to protect the swallows. During the first seven years, the sparrows either drove away the swallows or killed the chicks. In the eighth year, 16 sparrows were eliminated and the swallows finally

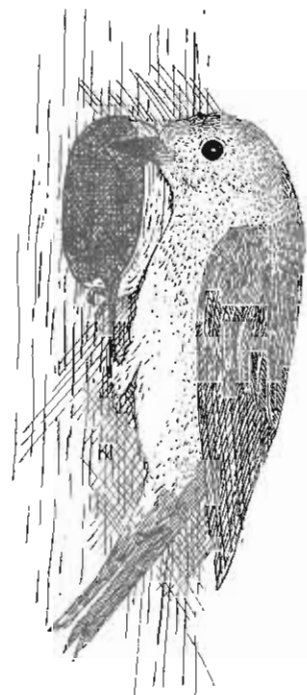


were able to successfully raise a brood.

One year when the swallows were driven away, they went to a neighbor's yard and nested in what seemed to me to be an oversized nest box with an oversized entrance. Even though his yard was infested with sparrows and my neighbor made no attempt to control them, I was frustrated to see the swallows successfully use the nest box with no interference from the sparrows. I did not understand how this could be.

Now, after reading Barry's article (on larger nest-box entrances as a sparrow deterrent), I might have an explanation for my neighbor's success.

— Michael E. Swanson, North Aurora, Illinois



What are wintering Yellow-bellied Sapsuckers eating?

By H. Dawn Wilkins, PhD

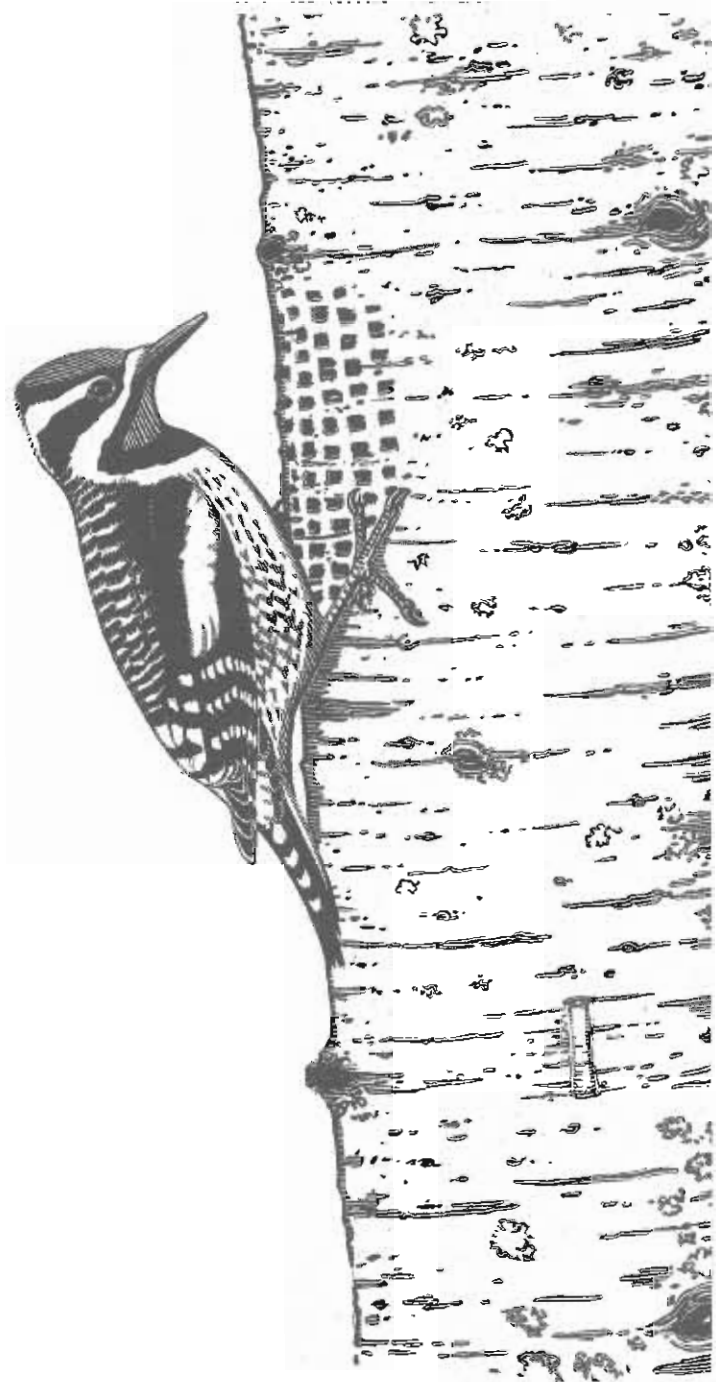
As a child visiting my grandparents in Alabama, I noticed a strange pattern of small round holes excavated into the side of a Pecan tree. Like many others, I wondered what type of organism was responsible for such a unique injury. I was surprised to learn that it was the work of a woodpecker called the Yellow-bellied Sapsucker.

There are four species of sapsuckers, all residing in North America, and they are unique among the woodpeckers because of their rather peculiar habit of excavating sap wells into the tissue beneath the bark of the tree that is responsible for transporting sugar-containing sap. During the summer months the sweet sap runs freely from these wounds and is consumed by a large number of organisms other than the sapsucker responsible for the injuries. Such organisms include flying squirrels, bees, wasps, hummingbirds, and other woodpeckers. During the winter the story is a little different.

When I began my research I was interested in the winter foraging habits of Yellow-bellied Sapsuckers. As my research progressed, I became interested not only in the kinds of trees they were using but also in the types of injuries they inflict on these trees and what effect this has on their foraging preferences. Is it possible that they inflict injuries to trees in order to make them better food sources? A second question arose as I began to learn more about the winter physiology of trees. I wondered if the birds really get the nourishment they need to survive primarily from sap or are they also using other tree products as food sources?

Yellow-bellied Sapsuckers begin to move south around the second week of September, and they remain on the wintering grounds until the first couple of weeks in April. During the winter, they occur in woodlands, orchards, and scrub lands. They forage on at least 246 species of native trees, six species of native vines, and 31 species of introduced trees.

Research has noted that Yellow-bellied Sapsuckers can kill trees by partially or completely girdling them with numerous wells. Girdling is accomplished by removing the living layer of phloem tissue located just beneath the bark. This is the tissue that carries nutrients from the leaves to the roots. Girdling causes nutrients to build up above the



Yellow-bellied Sapsucker
Scratchboard drawing by Dana Gardner

injury. This also results in a decrease in sugar concentration below the girdle.

Study has shown that on girdled trees, more new sap wells were excavated above the girdles than below. The researcher hypothesized that sapsuckers prefer to forage on phloem tissue with higher sugar concentrations. This then raises this question: are the birds intentionally girdling trees to create sources of higher sugar concentration?

I observed an adult male sapsucker for several mornings as he excavated vertical lines of wells on a Sweetgum that had been completely girdled by a beaver. This action probably interrupted the flow of nutrients to the roots and increased the sugar concentration high enough to make this tree an inviting food source for the wintering sapsucker.

To investigate this phenomenon, I decided to girdle species of trees that I knew often were chosen by sapsuckers, and then to measure the differences in sugar concentration to see if the sapsuckers responded to the injuries. I girdled these trees in August before the trees began to shunt nutrients to the roots for winter storage. I also wounded several control trees in a manner similar to the girdles, but did not completely interrupt the flow of nutrients to the roots.

The following summer I visited each tree to take samples and measure the sugar concentration of the phloem tissue above and below the injuries. The sugar concentrations were higher above the girdles than below, but there were no differences above and below the injuries on control trees. At the same time I counted the number of sap wells located above and below the injuries on girdled and control trees. I found significantly more sap wells excavated above the girdles where the sugar concentration was highest. This pattern was not observed on the control trees.

This suggests that sapsuckers may be able to alter trees through girdling.

There is a second question: What are the sapsuckers consuming when they are foraging at sap wells on dormant (winter) trees. While sapsuckers feed almost entirely on insects during the breeding season, it has been suggested that they use sap almost exclusively during the winter. In my study, I observed Yellow-bellied Sapsuckers spending about 54 percent of their time excavating and foraging at sap wells, suggesting that they were obtaining calories from this activity. What made this a mystery was that sap was seldom seen flowing from these sap wells as it does during the summer.

The winter physiology of deciduous trees is quite different from the physiology of summer months. During the summer, when the leaves are producing sugars by photosynthesis, there is a constant flow of nutrients through the phloem tissue from the leaves to the roots. During the winter, the trees have lost their leaves and are dormant. The flow of sugars has been interrupted, and one finds little or no sap flow during this time.

If there is no sap flowing through the trees during the winter, what are the sapsuckers doing? It is likely that wintering Yellow-bellied Sapsuckers gain some nutrition from ingesting phloem tissue. Phloem tissue is very high in

cellulose, however, making it typically hard to digest without the aid of bacteria located somewhere in the bird's digestive tract.

By examining a sapsucker found dead, I saw evidence that the tree tissue ingested by that sapsucker had been at least partially digested as it passed through the bird. This suggests that the bird may have been able to take at least some nourishment from the phloem tissue.

It is unlikely that wintering Yellow-bellied Sapsuckers are meeting their daily energy needs by consuming phloem tissue alone, and they probably supplement their winter diet with berries and insects. More research is needed to determine how Yellow-bellied Sapsuckers are meeting their daily energy needs during the winter months.

(H. Dawn Wilkins is presently an Assistant Professor of Biology in the School of Science and Technology at Quincy University, Quincy, Illinois. This research was conducted as part of her doctoral dissertation at Mississippi State University. It was funded by a student research grant from the North American Bluebird Society and a Blake Award from the American Ornithologists' Union. Dr. Wilkins can be reached at the School of Science and Technology, 1800 College Ave., Quincy University, Quincy, IL 62305, e-mail wilkida@quincy.edu.)

Literature used in preparation of this article:

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Tufted Titmouse

Bluebird News from Shore to Shore

Kevin Berner, research director for the **North American Bluebird Society**, has been given the **Fran Hanes Memorial Conservation Award** by the **New York State Bluebird Society (NYSBS)**. The award is presented periodically by the society, and was given to Mr. Berner for his work on bluebird conservation for **NABS, NYSBS, and for the Schoharie County Bluebird Society**. He also was made an honorary lifetime member of the **NYSBS**.

This was an excellent year for bluebird production in **La Crosse County of Wisconsin**, according to **Leif L. Marking**, project manager for the **Brice Prairie Conservation Association**. The long cool spell in spring favored Eastern Bluebird nesting, but the colder temperatures deterred the Tree Swallows from their normal competition for nest boxes, he said. Production of fledglings more than doubled that of last year (544 fledged) and tripled that of year 2000 (324), Mr. Marking reported, adding that several members placed more houses. "Our goal was to produce more than 1,000 bluebirds in La Crosse County, and we surpassed the goal," he said.

Jack Finch, 84, a bluebirder from **Bailey, North Carolina**, was honored by the **North Carolina Wildlife Federation** as Wildlife Conservationist of the Year for 2001. Mr. Bailey has worked on behalf of bluebirds for the last 30 years. He has been instrumental in forwarding the cause throughout his state, according to **Ann Rogerson Weaver**, who nominated him for the award. This note comes from *Bluebird Notes*, newsletter of the **North Carolina Bluebird Society**.

Bluebird Notes also tells us that **Frank Newell**, who heads the **Newell Farms Wildlife Center in Warrenton, N.C.**, has built 34,279 nest boxes since he began counting on Jan. 1, 1989. He says he plans to build at least 30,000 more.

Denise Aipperspach has been given an "Unsung Hero Award" by **Mountain Bluebird Trails, Inc. (MBT)**, for over 20 years of dedicated service to the organization and bluebird conservation. Ms. Aipperspach went to work for **Art Aylesworth** in 1980, and has served MBT as its secretary since that time. She was pictured receiving her award in a recent issue of *Bluebird Tales*, newsletter of MBT.

Also from Montana comes a story from **Rod Spencer of Great Falls**. Tending his nest boxes this past

spring, he found a dead male Mountain Bluebird on a nest. Removing the bird, he found beneath it a live female brooding six eggs. **Charlie Vaughn, Lewistown, Montana**, reported that a June storm blew one of his boxes from its mount, spilling the eggs. Charlie took the box home for repair, heard chirping from the box, and opened it to find a male bluebird trapped inside when the nest blocked the entrance hole. The bird was unharmed.

David Francksen, LaCrosse, Wisconsin, soon will become an Eagle Scout, thanks in part to his completion of a bluebird project. He built 28 Peterson nest boxes, donating them to the **Bluebird Restoration Association of Wisconsin (BRAW)**. This note came from BRAW's newsletter, *Wisconsin Bluebird*.



This Eastern Bluebird, caught by photographer Wendell Long, as it landed on a stump, looks ever so much like an angel.

Five Eastern Bluebirds owe their future to hand warmers from Walmart. **Darrell Gammon, Alliance, Ohio**, received a call on a cold day this spring from **Beth Gray**, who helps him monitor nest boxes. An adult bluebird pair were atop a box that contained five nestlings cold to the touch. Mr. Gammon took the birds to his car where the heater revived them. Then, he sent Ms. Gray to Walmart to buy hand warmers. Set beneath the nest and replaced every eight hours for three days, the warmers helped the birds survive the cold spell and fledge. This story comes from *Bluebird News*, newsletter of the **Bluebird Recovery Program of the Audubon Chapter of Minneapolis**.

Also from Minnesota comes a report that **Frank Rolf**, a Kansas bluebirder, found the nest of a Slate-covered Junco in one of his nest boxes this spring. And **Victoria Paulson of Barnum, Minnesota**, had a Yellow-bellied Sapsucker nest in one of her boxes.

In Nebraska, **Connie Conover**, who has built almost 17,000 bluebird nest boxes for **Bluebirds Across Nebraska (BAN)**, was named the 2002 winner of the Howard L. Wieggers Outstanding Wildlife Conservation Award. The honor is sponsored by the University of Nebraska Lincoln Wildlife Club and the Lincoln Star Journal. That item comes from BAN's newsletter, which also reports that BAN membership has hit the 1,500 mark. Chosen from that

large membership as 2001 Bluebirder of the Year for BAN was **Vera Rauscher of Fairmont, Nebraska**.

The **Virginia Bluebird Society** participated in the Northern Virginia Regional Park's Children's Alley at the Fairfax County Fair this past summer. **Sarrah McDade, Don Wiesnet, and Mary and Sarah Merriam** took turns staffing the society's booth. This note comes from *The Bird Box*, newsletter of the society.

The **Carl Anderson Memorial Bluebird Trail in Wilbraham, Massachusetts**, fledged 50 Eastern Bluebirds and 35 Tree Swallows this past season, under the care of **Ken Johnson**, trail manager. The trail has nest boxes at the Country Club of Wilbraham, at Rice's Fruit Farm, and the Hampden Senior Center.

The Nature Society News recently used a full-page story and five color photos to describe the bluebirding efforts of **Eleanor Dunham**, a NABS member since the 1980s and a speaker's bureau participant, too. Ms. Dunham maintains a 90-box bluebird trail near **Griggsville, Illinois**.



Red-breasted Nuthatch

Award nominations needed by Feb. 1

The North American Bluebird Society annually makes awards for outstanding contributions to bluebird conservation. Awards will be presented at the NABS convention in March; nominations must be received no later than Feb. 1, 2003.

If you wish to nominate an individual, a group, or someone involved in research for an award, please contact NABS board member David Cook at 664 S. 14th St., San Jose, CA 95112, e-mail justdave50@earthlink.net, or by telephone at 408/275-1492. Include your telephone number or e-mail address, please.

For individual awards, consider the ways in which nominee has publicized or aided bluebird/cavity-nester conservation. Examples might include speaking before groups; working with young people; obtaining publicity in newspapers, radio, or television; working at nature centers, workshops, or fairs; inventing or improving trap or box designs; designing and producing publications; plantings, etc.

For nomination of a group, consider workshops offered, number of boxes maintained by group members, increase in bluebird production, methods of recruiting monitors, successful fledglings, etc. Programs must have been in place for a minimum of five years.

For research awards, briefly summarize research completed (and in progress) involving bluebirds/cavity nesters, and include bibliographic citations of articles published about bluebirds or other North American cavity nesters (copies of articles or abstracts are desirable).

January 25 is next deadline for *Bluebird*

The deadline for the Spring 2003 issue of *Bluebird* is Jan. 25, 2003. Earlier submissions always are appreciated. The editor prefers to receive material by e-mail (no attachments, please) at two-jays@.att.net. Postal address is Jim Williams, 345 Ferndale Road N, Wayzata, MN 55391. Include a self-addressed stamped envelope if you wish return of manuscripts or photographs. Letters to the editor are welcome. Letters may be edited for length and content.

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The North American Bluebird Society gratefully acknowledges its members who contribute to NABS via annual financial gifts above and beyond their membership dues. Every donation plays an important part in supporting the continent-wide bluebird conservation, education, and research efforts of NABS. NABS is privileged to include the following individuals, corporations and foundations among the organization's most

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 c/o Dr. Michael Pietro
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Wisconsin

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