WORKSHOP

"Mission Possible: Owls in Education"

Marcia J. Wilson[1]

Abstract.—A panel of four experts in the fields of environmental education, rehabilitation and research assembled for a 1-3/4 hour workshop chaired by a moderator. Each panelist reflected upon their experiences using live owls in their own environmental education and/or research programs. Permanently disabled or imprinted owls can live long, useful lives as ambassadors from the world of wildlife. Given proper handling, training and care, these owls provide a compelling connection to the natural world for both children and adults. Likewise, an up-close and personal encounter with a wild owl can open minds of any age to the broader issues of conservation. Discussion of the agenda topics among the panelists, moderator and 74 workshop attendees was lively and stimulating. Attendees commented and asked questions. Discussion topics included program descriptions, teaching and handling techniques, ethics, cosmetics of non-releaseable owls, communication between educators and researchers, the virtues of owl pellets as teaching tools and issues regarding their sources, travel techniques, and use of the Internet among educators, students and researchers. A live Great Horned Owl (Bubo virginianus) was present to help illustrate topics discussed during the workshop.

Moderator Marcia Wilson (Ms. Wilson) opened the workshop by reading from the journal of naturalist Henry David Thoreau:

> *"Jan. 7. [1854] P.M. - To Ministerial Swamp. I went to these woods partly to hear an owl, but did not; but now that I have left them nearly a mile behind, I hear one distinctly, hoorer hoo [imitates Great Horned Owl call]. Strange that we should hear this sound so often, loud and far,—a voice which we call the owl,— and yet so rarely see the bird. Oftenest at twilight. It has a singular prominence as a sound; is louder than the voice of a dear friend. Yet we see the friend perhaps daily and the owl but a few times in our lives. It is a sound which the wood or the horizon makes." (Cruickshank 1964).*

This passage embodies most people's experience with owls, as they are more often heard than seen. People remember their experiences with owls in great detail and regard the birds as rare, special, and even magical.

Ms. Wilson introduced herself and each of the panelists by reading biographical sketches (see below). Before the panelists presented their own opening statements, Ms. Wilson acknowledged the assistance and inspiration of Dr. Bob Nero, educator, biologist and a key member of the Owl Symposium Committee; Dr. Jim Duncan, chairman of the Owl Symposium Committee; Ms. Kay McKeever, director of The Owl Foundation; Mr. Mark Wilson, wildlife photographer, writer, and Ms. Wilson's husband; and Mr. Denver Holt, wildlife biologist and president of the Owl Research Institute,

[1] *Marcia J. Wilson, Workshop Moderator and Director of Eyes On Owls live owl programs, P.O. Box 220, Dunstable, Massachusetts, 01827-0220, U.S.A.*

Missoula, Montana. Ms. Wilson also introduced Lisa Braun (Ms. Braun) of the rehabilitation staff at the Manitoba Wildlife Rehabilitation Organization (MWRO) in Glenlea, Manitoba. Ms. Braun kindly brought a live Great Horned Owl from MWRO and positioned the owl on a free-standing perch to the left of the panelists. Ms. Kim Middleton, a volunteer at MWRO, accompanied Ms. Braun and assisted with transport and set-up of the owl.

PANELISTS

1. *Shawna Wiebe (Ms. Wiebe), Rehabilitation Director (formerly), Manitoba Wildlife Rehabilitation Organization (MWRO, Box 49, Glenlea, Manitoba, R0G 0S0) 137 Le Maire Street, Winnipeg, MB, R3V 1E1; (204) 883-2122 MWRO; (204) 261-8395, fax (204) 883-2582. As Rehabilitation Director, Ms. Wiebe ran MWRO's wildlife hospital until 1 February 1997, working closely with the education program, coordinating volunteers and training, and overseeing media coverage. She also trains dogs in obedience and search and rescue. She holds bachelor's degrees in both science and education.*

2. *Rick Smith (Mr. R. Smith), Elementary School Teacher, Queenston School, 245 Queenston Street, Winnipeg, Manitoba, R3N 0W6; (204) 489-3423, fax (204) 488-6639. Experienced at teaching various grade levels, Mr. Smith has focused for the past 6 years on actively involving elementary school children in science, often using live animals. He has a passion for sixth graders. Lady Grayl, Dr. Robert Nero's captive Great Gray Owl (Strix nebulosa), is no stranger to his classroom. He uses science fairs and clubs to generate interest among students. Under Mr. Smith's guidance, students raised money for the Manitoba Wildlife Rehabilitation Organization. He holds a bachelor's degree in education.*

3. *Katy Duffy (Ms. Duffy), Assistant District Naturalist at Grand Teton National Park, Moose, Wyoming, USA 83012; (307) 739-3593, and Owl Researcher at Cape May, New Jersey. Using mounted birds, study skins and parts (feet, wings, tails, skulls, pellets), Ms. Duffy has presented programs on owls and hawks for general park visitors, special adult groups and children for the past 14 years. She is a Saw-whet Owl (Aegolius acadicus) researcher and bird bander. Ms. Duffy has conducted an owl banding project each fall since 1980 at Cape May, New Jersey. She does demonstrations with live owls and other birds during her banding studies and has encouraged public participation in her research projects. She holds an undergraduate degree in biology and a master's degree in ecology.*

4. *Norman Smith (Mr. N. Smith), Director, Educator and Owl Researcher at Blue Hills Trailside Museum and Chickatawbut Education Center, 1904 Canton Avenue, Milton, Massachusetts, USA, 02186; (617) 333-0690, fax (617) 333-0814. Mr. Smith brings 27 years of raptor study to his educational programs presented both at the museum and in metropolitan Boston schools. His experience with hawks and owls includes 20 years of rehabilitation and bird banding. A self-taught naturalist, he has worked for the Massachusetts Audubon Society (MAS) for 23 years, currently serving as natural history museum director. Mr. Smith studies wintering Snowy Owls (Nyctea scandiaca) at Boston's Logan Airport through a long-term color-marking, banding and relocation project. He and his two children are featured in "Owls Up Close", and "Hawks Up Close", videos produced for the National Audubon Society by the Nature Science Network.*

5. *Marcia J. Wilson, Workshop Moderator and Director of Eyes On Owls live owl programs, P.O. Box 220, Dunstable, Massachusetts, USA, 01827; (508) 649-3779, fax (508) 649-7377. With over 30 years of experience in biology, field ornithology and environmental education, Ms. Wilson presents live owl programs to schools and adult groups throughout eastern Massachusetts and southern New Hampshire. Her presentations feature owl photos taken by her husband, wildlife photographer Mark Wilson. Born to birding parents, she had the good fortune to grow up with owls as her mother presented live owl programs to schools. Ms. Wilson now devotes her time to teaching about owls. Ms. Wilson holds a bachelor's degree in biology.*

AGENDA

1. Educational Programs: What works? What doesn't? Panelists share innovative tips and techniques for outreach. Education is more than just an owl on a fist.
2. Owls Up Close: How are owls presented to the public? Panelists discuss ethics of anthromorphism, handling techniques and cosmetics. Can an owl's disabilities detract from the educational message?
3. Teaching the Teachers: How do educators and rehabilitators keep abreast of current research on owls? Newsletters, scientific journals, magazines, cyberspace, conferences: are these the best sources for information?
4. A Pellet Primer: Do commercial supply companies impact wild owl populations as they fill bulk orders for pellets for schools? Are there alternative sources?
5. Owls on the Road: What special challenges do the birds face during time away from their accustomed enclosures? Issues of stress, dehydration, feather wear, travel techniques, rest, and feeding will be explored.
6. Owls on Line: How are teachers, students, and researchers interacting through the Internet? How do we inspire kids to look beyond their computer screens and explore the natural world?

PANELISTS' INTRODUCTORY REMARKS

Ms. Wiebe: As former rehabilitation director of MWRO, Ms. Wiebe described taking educational programs on the road to classrooms and mixed age events with children and adults. Her programs focused on interactions of people with the natural environment, stressing conservation and preservation of natural habitats and wildlife. She also explained how some well-intentioned human interactions at times, in fact, created non-releasable birds.

Mr. R. Smith: As one who has taught a wide range of students in Winnipeg's public schools, Smith spoke of embracing the study of owls in his curriculum. After an intensive period where students learn about owls' biology, life cycles, and habitat needs, Mr. R. Smith uses a live owl presentation, often by Dr. Nero with his captive Great Gray Owl, "Lady Grayl", as well as field trips to round out their learning about owls. He uses these interactive experiences to get students interested in science.

Ms. Duffy: In speaking of her natural history presentations and field trips at Grand Teton National Park, and during her Saw-whet Owl banding research at Cape May, New Jersey each fall, Ms. Duffy emphasized the impact of sensory and tactile impressions on all who participate in her programs. She strives to involve everybody with owls through her own solid knowledge and an infectious enthusiasm for her work. Ms. Duffy has observed that people will only protect what they know and love.

Mr. N. Smith: Painting a scene of his own childhood experiences with owls, Mr. N. Smith described how many of his friends thought he was "really wierd." His parents' friends expressed reservations when he ventured with their sons to a nearby coastal barrier beach with the family car to look for Snowy Owls. The Smiths explained that, "no, their sons weren't going out for a few drinks, but really were out looking for owls." Shortly after that, Mr. N. Smith began working for the Massachusetts Audubon Society doing environmental education programs which now, some 25 years later, reach 400,000 people near a major metropolitan city, Boston. He spoke of the heartening experience of opening the eyes of inner city children to the world of wildlife, forests, and whole ecosystems, as a contrast to their daily lives where single trees, asphalt, gangs, and violence are the mainstays of their environment. MAS's Trailside Museum now operates hawk and owl banding stations at two locations, in addition to Mr. N. Smith's Snowy Owl project, where students are incorporated into various research projects.

After Mr. N. Smith began involving his own two children, to whom he referred as his "assistants", with his Snowy Owl research at Logan Airport in Boston, he realized the critical value of involving children in hands-on environmental education and research projects. "One day at last light", he related, "one of my assistants, then aged 7, insisted we try to trap a Snowy Owl perched in a tree about 2 miles away. Even with 50-power binoculars, we weren't even sure it was an owl. After explaining to her that I was the researcher who had read 117 research papers on Snowy Owls, that owls' vision had no magnification ability, and that trying to trap the bird was really a waste of time, she looked up and said, 'Dad, I think you're making a big mistake because this may be a bird that you may've caught in the past,

and this could be a real interesting situation.' So I said, 'OK. To show my assistant how wrong you are, we will take this trap, put it out on the edge of a runway, with brown grass. We will put a starling in the trap and wait 5 minutes. It's getting late, downtown Boston traffic is horrendous, we told Mom we'd be home at 6 o'clock, it's 5:30 now, she's going to be really upset, but we'll give it 5 minutes.' So we put the trap out, and just to show her how wrong she was, within about 2 minutes we saw this big white thing coming in, flying across the water, and landing on that starling. So she looks up at me and says, 'So, Dad. You know how well Snowy Owls can see.' And from that point on, I realized maybe we don't know as much as we think we know about these creatures. By stimulating and inspiring young children who have a lot of ideas, and don't get shut off or put off by these things because they think someone knows, in fact, maybe it's really right."

In an aside, Mr. N. Smith shared some highlights of his Snowy Owl banding work at Logan Airport, Boston. When he first began 15 years ago, researchers believed Snowy Owls were coming to Massachusetts in the winter starving to death due to low food resources in the North. In fact, during big flight years, he found most owls were in excellent condition. Ninety percent of them were young birds. They had very few parasites. Their plumage was perfect. In non-flight years when there were few Snowy Owls, he found they were mostly adult birds, emaciated, had poor feather condition, and were loaded with parasites. Correlating this with what was happening in the Arctic tundra, he found that in years when there were plenty of lemmings, lots of young Snowy Owls were produced. So, there were lots of healthy birds to disperse southward. Researchers had also believed that these owls never returned to the Arctic. Mr. N. Smith has captured 10 banded Snowy Owls that have returned to Logan Airport, and thinks other banded owls return that he's unable to capture. Two weeks before the symposium, he caught an owl he'd banded 10 years ago. So he believes some of these birds do return. He said researchers still have no idea exactly where they go to or where they come from.

In closing, Mr. N. Smith affirmed a belief common to all four panelists: "To me, it's a lifelong mission to instill education in people, because even everyone in this room, even the little you think you know, can be really important to somebody else."

Ms. Braun gave a brief background on the Great Horned Owl present at the workshop. A farmer found a dead adult Great Horned in barbed wire not far from the nest. After waiting a couple of days, he cut the tree down to get the young owls. This owl suffered from head trauma and its sibling died. The farmer kept the owl another 2 weeks, during which time the trauma was set and the bird became imprinted on people at this critical young age. After it was brought to MWRO, the owl was found to be blind in its left eye and deaf in its left ear, rendering it non-releaseable. The owl, a cosmetically beautiful, light-plumaged female, is now used for educational programs by MWRO.

DISCUSSION

Since each of the panelists had already touched on agenda question #1 about individual approaches and techniques in their own educational programs, Ms. Wilson continued with a formal discussion of the agenda. She asked them to comment on ethical questions, such as how the bird is being handled and presented, and what the group's perception is. She posed, "Is it being treated as a pet? Is it being regarded as a wild bird? I'm sure we've all in this room seen live animal programs that are presented in a fashion that the animal's really being treated as a house pet, even though it might be a wild species. So let's reflect a little bit on that issue. I know that Norman, you have some views on that with regards to your presentations at the museum, so that certain perceptions are upheld. Perhaps you could reflect on that for us."

Mr. N. Smith: Non-releaseable live owls, other birds and animals are utilized at Blue Hills Trailside Museum. Historically, it has been a real drawing card to offer people the chance to see a wild animal up close, because it attracts their attention and gives educators a chance to hopefully get an educational message across to them. To illustrate how presentation techniques have evolved at the Museum, Mr. N. Smith gave an example of how years ago a striped skunk, "Sandy the skunk", was held in front of a group and presented as a wild animal, all the while being petted by the well-meaning teacher-naturalist. Although the

message was that people shouldn't keep skunks as pets, Mr. N. Smith stressed, "as we all know, particularly young kids don't hear with their ears, they hear with their eyes. When they see Sandy the skunk being petted, they think, 'Ya. I would like to have a pet skunk myself.' Why not?'' The children all lined up after the program to touch the skunk. Some time later, a mother called the museum to say her daughter was really thrilled to meet Sandy the skunk, but while on a family picnic, the little girl mistook a "tame" skunk with distemper and tried to pet it. Now, Mr. N. Smith explained, the museum does not give its birds or animals names, he presents them on perches, tables, or natural exhibits, and instead of petting the animal, people get to hold wings, bones or preserved specimens. He firmly believes there are valuable benefits to being able to see wild animals, such as the Great Horned Owl at the workshop, up close and be able to learn about their important features.

Ms. Wilson: Mr. R. Smith, having worked directly with many different ages of children as a public school teacher, was asked, "How do you instill a respect for a wild animal in your students and what are some of their reactions when, specifically, live owls are brought in?"

Mr. R. Smith: Working with grades 4, 5, and 6, he finds that most students have never seen a wild owl up close. His students sponsored Dr. Bob Nero's program where he brings Lady Grayl, an imprinted Great Gray Owl, into the classroom. He's found that some children are timid or shy around the owl because it is wild, and adults will react this way, too. On the other end of the spectrum, he's seen children and adults who really want to touch the owl. His students donated money raised for Dr. Nero's Lady Grayl Fund to MWRO. Although MWRO is not normally open for group visits, Mr. R. Smith's students were allowed to visit the facility. There were some birds they were not allowed to see up close to prevent imprinting, and that concept was a lesson of its own to the students. He said, "Live animals are always a nice hook or a nice prompt for kids. I never have any problem getting my kids interested in research or in owls."

Mr. R. Smith showed some poster displays about owls his students had made. Two of his students had spotted and correctly identified a Great Gray Owl earlier this winter and had photographed it in River Heights, within Winnipeg city limits. "I think that's the part of the impact of education that you can't really measure. Who's to know that these guys were ever to see an owl again and recognize it?"

Ms. Wilson: "Now Katy, when you're handling all of those Saw-whets in New Jersey, and you have all those little kids around you, what do you do? Do you allow the kids to touch the birds?"

Ms. Duffy: "I do let people touch the owl. I show them that I'm handling them gently, but firmly, and explain why. To me the supreme honor if you're a visitor to my owl banding project is for me to let you release a Saw-whet Owl. We go outside, shut off all the lights, and release the owl at my usual spot. I'm a firm believer that a bird in the hand is best." At this very moment, the live Great Horned Owl gives a full 4-note hoot. "So, is that approval?" (Everyone laughs) Ms. Duffy discourages petting the owls, yet allows the group to feel how soft the feathers are, how large the skull is, etc. while handling the bird gently. She explains that the owl is perfectly capable of scratching and biting if not handled carefully, and added that people are thrilled with the experience.

Ms. Wilson: "Now that's a really fun example of how she's using bird banding to allow people to touch the bird, because they all want to touch the bird. My parents are bird banders, and as a child, I can't tell you how thrilling it was to be able to hold and release a bird." She explained that legally in the U.S. educators are discouraged from letting people touch the bird from a liability standpoint and to protect the birds. Yet, by letting someone release a banded bird, a researcher can provide a lasting memory for a child or adult. She next asked how Ms. Wiebe responds to the question from children, "I want to have an owl when I get older. Where do I buy an owl?"

Ms. Wiebe: Ms. Wiebe tends to get questions like this more often when the owl is displayed on the fist than on a stationary perch. People tend to associate the bird's behavior with its handler, and often remark that the owl seems to "like" the person. She explains that the birds are wild animals and don't show affection. The birds cannot survive on their own in the wild because of their disabilities. She

emphasizes respect when questions like, "Can I pet it? Can you pet it?" come up, adding that the owls are not pets like budgies. The wild owl has its space and they try not to invade that space. She uses the concept of predator-prey relationships to explain why touching the owls is uncomfortable for the bird. The birds instinctively regard humans as predators. Since predators would not normally touch or pet their prey other than trying to kill it, a wild bird's natural reaction is to avoid being touched or to defend itself when approached.

Ms. Wiebe touched on cosmetics of education birds. MWRO tries to accurately represent the birds as they appear in the wild, avoiding disfiguring disabilities, such as severe head injuries or amputations. This helps inspire respect for the natural beauty of the bird instead of pity. When people ask about keeping the owls as pets, she gets into quality of life issues for the bird. She talks about their specialized diets, housing requirements, and how difficult it is to secure a steady supply of rats or mice, adding these items are not readily available at the local pet shop. She uses the example of how a Great Horned Owl can sink its talons through a hand without even blinking to illustrate how dangerous some birds can be, pointing out the heavy gloves required when handling the owl.

Ms. Wilson opened the discussion up to the audience for comments or questions.

Randy Love, Alberta Educational Association: Mr. Love's experience at the Calgary Zoo using amputee owls in educational programs is that often times people don't notice the bird's injury. Ms. Wilson concurred, and when she has her students guess the bird's disability, her own Eastern Screech-owl's amputation goes unnoticed until the bird flaps its wing.

Lorraine Andrusiak, (Ms. Andrusiak), research, ecological consultant and associated with a British Columbia wildlife rehabilitation organization: In British Columbia, releaseable and physically deformed owls are not allowed to be used in educational programs or displays.

Ms. Wilson: The panel was asked to reflect briefly on how the regulations vary from province to province and in the U.S.

Ms. Wiebe: In Manitoba, since there is really only one organization doing rehabilitation, regulations are in the process of being formulated, for which MWRO strives to set the standard now in the early stages.

Ms. Wilson: "During many of my programs, there's always a kid who asks, 'When are you going to let the owl fly around the room?' My U.S. state and federal permits do not allow that. The owl could potentially hurt itself or an audience member." Ms. Wilson next asked the panelists to touch on the question of liability when using live birds close to people.

Mr. N. Smith: He said, no, he does not let his birds fly around and explained that his facility, owned by the Massachusetts (state) District Commission and operated by the (private, non-profit) Massachusetts Audubon Society, is in fact required to carry $10 million in liability insurance coverage because of the potential risk of injury. Mr. N. Smith noted that Massachusetts has a history of high monetary claims. Since facilities don't "own" their non-releaseable wildlife, the fate of non-releaseable birds rests with the state's director of non-game species. His office determines where various individual non-releaseable birds are placed. For example, an endangered Peregrine Falcon is more likely to go to a facility such as Blue Hills' that reaches 400,000 visitors per year and has the liability coverage than a smaller operation that reaches several hundred people. Mr. N. Smith doesn't let visitors get too close to the animals. He added, "Liability certainly is an issue we think about all the time, and something I never thought about in the past until we started paying these insurance premiums. Now we think about it all the time."

Ms. Wilson: "Well, thanks to you, Norman, now we're paying insurance premiums, too!" Ms. Wilson motioned to the crowd of people, including several children, standing in the doorway to please come in.

Dr. Bob Nero: "I haven't heard much about the preparatory work yet, and Rick (Smith) will vouch for this. I require the class, or the entire school, to study owls in considerable depth. By and large, I practically demand that all the people in the school have the opportunity to see one or more educational films, slide sets or whatever, on Great Gray Owls, because that happens to be my particular topic. Invariably, they study owls of many different kinds." For the half minute, the Great Horned Owl has

been preening on its perch, and now rouses its feathers with a great shake. More eyes are on the owl than Dr. Bob. "I can't compete with that bird!" he huffs lightheartedly. "The second requirement for my program is the kids have to become involved, to the extent that's feasible and permissible, in fund raising in support of endangered species. The owl (Lady Grayl, Dr. Nero's tame Great Gray Owl) and I come to the school as a reward for the hard work that the students and teachers have done. I think that makes our presentation that much more effective."

Dr. Nero offered two examples to illustrate the extent to which this works. "At an inner city school here in Winnipeg, as I walked into the school with the tame Great Gray Owl on my glove, with the kids in the hallways leaning back against the wall saying, 'Gosh! It's alive!', I heard a grade 5 Vietnamese boy point to the owl as we went by and say, 'Nictitating membrane!'. I thought, 'This is going to work.' One more example: In a grade 4 class, each student had studied a different species of owl. One student asked, 'Could you tell me please the clutch size for Blakiston's Fish-owl (Ketupa blakistoni)?' I said, 'Sure! If you can tell me the scientific name.' The kid knew it!"

Ms. Wilson: "Well, that's a great lead in to talk about the preparation that the kids do with the teachers. Many of the teachers are also doing research." Ms. Wilson mentioned the teacher's kit she sends to the head teacher once a program is booked that consists of a list of owl books, videos and audio tapes, a source for owl pellets and field trip ideas to see owls in captivity and where to look for them in the wild. Teachers can work the information into their curriculum and become more knowledgeable themselves. She asked Mr. R. Smith to reflect on some of the preparatory work that he does with his students before a visit from the "Grand Master" (Dr. Nero).

Mr. R. Smith: "In this day and age, with the spending cuts in schools, it's very difficult sometimes to get the resources we need. I try to do my homework. Between September, when I first contacted Dr. Nero about an owl program, and March, when we finally met, Dr. Bob had lots of resources for me and lots of time. We were able to show some videos to all the students in the school. I don't want to just bring an owl in and it's just a one shot deal. I want to make some real life connections and some connections in curriculum." Mr. R. Smith worked closely with the school's computer teacher, set up a research project where the students studied a particular owl, and focused on owls in Canada, especially the endangered ones. He found this tied in well at the grades 4-5-6 level, beginning with study of habitats, and on to adaptations, wild communities and populations, environmental awareness, reclamation projects, sustainable develeopment, and so on.

Ms. Wilson: "Think about what you were learning in sixth grade. Were you doing it at that level? I know I wasn't." Ms. Wilson said teachers are using owl study in their curriculum at a pretty complex level. Students are eager to study a particular owl species on their own. She next moved to discuss use of owl pellets in the classroom to illustrate food chains and the web of life. Middle school students get hooked on studying owl pellets. She asked the panel to reflect on their use of owl pellets, sources of owl pellets, and whether they use pellets from their own research.

Mr. N. Smith: "During my Snowy Owl project, my two assistants collected over 5,000 pellets. We've utilized some of these pellets in school programs and have kids take them apart, and have them try to analyze what the owl has eaten." Mr. N. Smith recalled a rainy day when his son had a friend visit. His 4-year-old son asked his friend, "How many pellets do you have in your collection?" Because his son had grown up with this, he assumed that everyone in the world had a pellet collection. While the pellets collected from wild birds were better than those from his captive birds, it made no difference to the student dissecting a pellet, hunting for the prized skull it contained.

Mr. N. Smith described an inner city class that came to his museum as a follow-up after a live owl program and session of pellet dissection. "As the children got off the bus, they were screened for weapons. These kids are real tough kids. By the time those kids left at the end of the day, those kids were the friendliest kids we'd ever met, and they said, 'when can we come back?' The only things they have at home are drugs, fights on the streets, and nothing fun or exciting to do. These kids were thrilled to get an opportunity to have a day to come out exploring and dissect a pellet. So it can actually change somebody's life—a little, old, regurgitated pellet."

Ms. Duffy: "The pellets I've used are either ones I've collected myself or have come from rehabilitators I know. Sometimes I pass around a bag with a pellet in it. That way, I can reuse it. I teach them how to search for pellets on their own."

Ms. Wilson: "We're constantly encouraging the kids to look for owl signs as clues to owls' presence. We use the pellets as one of those clues as well as learning about whitewash and owls' calls to teach them how to observe owls without disturbing them. So, the pellet really works into all different levels of owl study."
Ms. Wilson next asked the panel and attendees to discuss the sources for owl pellet, stating that teachers can order large quantities of owl pellets from large biological supply houses, paying a few dollars per pellet. Where do these pellets come from and how are they collected? She's been approached over the years by researchers and educators concerned about possible impacts on wild owl populations, particularly during the nesting season.

Mr. R. Smith: He was anxious to use owl pellets as an educational tool, and his first instinct was that if pellets were being sold commercially by big supply houses and had been fumigated as advertised, they must be legitimate. Then, after Dr. Bob Nero mentioned possible disturbance factors and instead offered some of Lady Grayl's pellets, Mr. Smith approached his administrator with the idea. They found they'd stepped into a gray area of questions about possible health risks like allergy and sanitation concerns with bringing unfumigated owl pellets into the classroom, creating a dilemma. At this time, in the city of Winnipeg and across Canada, he explained, elementary schools can no longer dissect dead animals. Realizing they were entering uncharted territory and were concerned about buying from a big company, unfortunately they opted not to do it. They thought about sending home a parental consent letter, but, Mr. R. Smith concluded, "Do you want to get into that political hotbed of having that all happen? We live in a fairly volatile community and wouldn't want anything to happen. It wouldn't take long for some people to bring charges. He realized he was breaking a bit of ground as a grade 6 teacher. "All of a sudden, you're saying, 'Whoa! I don't need all this extra hassle'. All I wanted to do was dissect some owl pellets and have the kids learn a little bit more, so in the end, we opted out of it. I kind of feel my kids got cheated out of a valuable learning experience because there didn't seem to be any clear-cut school policy on it. Hopefully, next time we can go in a bit more educated about it."

Ms. Wilson: Ms. Wilson allowed that there were many unanswered and perhaps unanswerable questions about health hazards to students and disturbance problems to wild owl populations.

Ms. Wiebe: "The kids claim that they are Barn Owl (Tyto alba) pellets."

Ms. Wilson: Her understanding is that most are Barn Owl pellets that have been fumigated. The only company that she currently recommends in her teacher's kit is a small operation on the west coast on which she had gotten a good recommendation from an owl researcher.

Pat LeClaire (Ms. LeClaire), school teacher, Winnipeg: "I'm here with Dolly Chisick, we're disciples of Dr. Nero, and we've been honored with having him visit 2 years during my 9 years here. We've used pellets successfully and get them from Pellets, Incorporated in Washington. They are perfectly healthy. The kids come with rubber gloves, but by the end of the hour, the gloves are off, and they are just so involved in it. I can just see their participation and excitement. It is the hot topic in grade 5 and has grown in reputation at our school."

Ms. Wilson: "Yes, and it's the disgusting aspect of it that makes it all that much more attractive to these kids. We need to think of the trade-offs coming into play here."

Ms. Andrusiak: Ms. Andrusiak conducts Barn Owl research and has run into numerous problems with pellet collectors. For instance, she had an opportunity to band Barn Owls at a nest study site, located on a private farm. When she arrived to ask if the owners would allow her to band the owlets, she was abruptly told, "I'm sorry, but this guy comes up from Washington to collect pellets and has asked us to not let any other owl people in with the owls." So, she was not allowed in to band the owls, posing a problem for her work. She said the barn owners seemed happy that this man comes, he tells them they're for educational purposes, and don't realize that he's selling them. As far as she knew, the property owners do not get a financial cut from the operation, but Ms. Andrusiak's main concern was that the birds were being disturbed.

Ms. Wilson: Ms. Wilson added concerns she had heard from East Coast researchers about Barn Owl populations being disturbed by pellet collectors, and admitted that there were no clear cut answers yet to this conflict. Ideally the activity should not be conflicting with research or annual nesting and/or roosting cycles of any owl species. She suggested pellets might be collected from former roost sites after the birds have gone.

Michelle Kading (Ms. Kading), Director of Interpretive Programs, Oak Hammock Marsh Interpretive Center, north of Winnipeg: About 1,300 children visited Ms. Kading's facility in 1996 and participated in owl pellet dissection, with 3-4 students per pellet. She purchases fumigated pellets from Pellets, Inc. in Washington. "We're probably one of the bigger pellet consumers in the province." She also buys pellets from Educom in Toronto, but they sometimes have trouble keeping up with Oak Hammock's demand. She, too, was concerned with health issues, and called the companies and made sure the pellets were fumigated. "They're not as expensive as you might think, about $2.25 per pellet, and come wrapped in foil. The kids call them 'baked potatoes.'" Last year, Ms. Kading got a call from a public health nurse because a school child was about to come dissect pellets, and the parent was concerned about pellets transmitting the Hanta virus. The mother knew the virus was found in mice, that owls eat mice, her child was going to touch the owl pellet, and was afraid the child would get Hanta virus. Both companies confirmed to Ms. Kading that Hanta is contained in the blood system and with fumigated pellets there was no danger.

Ms. Wilson: She clarified that fumigating pellets means they've been heated, or autoclaved, at high enough temperatures to kill any bacteria or virus, and presumably make them safe to handle with usual safety precautions.

Ms. Kading: "We strongly suggest that people do not collect their own pellets, because an untrained person, or, even one of my own staff who was very keen on owl pellets, came back with what he thought were real owl pellets that were in fact coyote droppings. Both handling coyote droppings and inhaling near wolf droppings can be very harmful to people." She feels it's very dangerous if you don't know what you're looking for, except for a trained expert.

Ms. Wilson: "Here's an example where the school groups are coming to you, and you can suggest that the teachers and students do their preparatory work beforehand to learn the differences in size, shape, and composition between owl pellets and animal scats or feces. There is a fine line there where you still may not want the kids to be picking up owl pellets on their own, but just use them in the wild as a sign that owls are present."

Rick Gerhardt, Oregon: "The Centers for Disease Control (CDC) in Atlanta (Georgia) has a disease control packet available free specifically addressing Hanta virus. Also, I do have one aquaintance making his living in Oregon collecting pellets, selling them to Carolina Biological Supply which pays him $.50 per pellet. He spends most of his time driving around collecting Barn Owl pellets." Mr. Gerhardt said collecting does not have to be an invasive activity if done in the right season, and this aquaintance seemed sensitive to disturbance, adding it's not a goldmine, either. He thought he might be making $20,000 per year, but it's a full-time job.

Mr. Chester, Medicine Hat: Mr. Chester operates a nature store that sells pellets and has one partially dissected on display. His supplier is Edu-fund in New York. Some pellets are bought by schools, but many are bought by adults with children, and he finds the adults are often more interested than the kids. He is in the position of teaching the adults at the counter about owls and the food chain, and he feels there is a real need to increase educational programs directed toward adults, too.

Ms. Wilson: "Oh, yes! The adults are fair game. We do lots of adult programs."

Ms. Kading: Oak Hammock Marsh got a request to buy owl pellets from the Rockwood Institute, a correctional facility, next to Stony Mountain penitentary. They thought this would be a wonderful thing to do with their adult residents.

Dr. Nero: "Good use of pellets for jailbirds!"

Ken Bevis (Mr. Bevis), formerly with the U.S. Forest Service contributing to the CDC's research into Hanta virus, Washington: "The Hanta virus is a very fragile virus. It has a lipid coat and they don't think it really has a very

long life span outside the actual fecal matter or urine of the actual rodents themselves. So, it's unlikely, at least from what I've read, that the virus would be transmitted through a pellet due to time and probably the digestive action of the bird. As an aside, we've been doing a whale of an experiment with everybody handling pellets, so if it was a problem, we'd probably know by now!"

Ms. LeClaire: "It hasn't bothered me for 9 years. I'm still here."

Mr. Bevis: Ms. Wilson confirmed with him that the Hanta virus is transmitted through the feces and the urine, rather than through the digestive system of the owl. Mr. Bevis added, "From what I've read, CDC really doesn't know, because it's a rather mysterious virus, but it's probably not a problem in pellets. That's the feeling that I got."

Ms. Wilson: "Now, Dr. Bob (Nero), maybe you'd reflect on how pellets taste. I know you've tasted pellets. You didn't get sick from that, did you?" she asked lightheartedly.

Dr. Nero: "No, the mucus coating is sweet. The interior is rather unpleasant."

Ms. Wilson: "But you're here to tell the story! This is some great information and it makes me want to encourage a general awareness of how you, as researchers, if you're out collecting pellets, can recycle them. I mean if you have trash barrels full of them, perhaps if after you're done getting weights and analyzing them, etc., if they're intact, rather than just disposing of them, autoclave them to take care of the sanitation problems and donate them to some local schools for educational use. They really are the nut in using owls in education and getting kids to really think about the whole food chain, and boy, it's just like a little prize when they pull that skull out! It's a real game for them." Ms. Wilson went on to tell of a photo sequence in her program showing a Great Gray Owl coughing up an owl pellet. The last slide shows the pellet in the bird's bill. Using the sequence, she teaches the students how to "hock up an owl pellet." At the prodding of the audience, she proceeded to go through the motions, with some animation, while explaining the process. "With the final slide, I tell them the pellet is still steaming by the time I pick it up and pull the skull out of it. So, we really get the kids excited and they love it."

Ms. Wilson gave a brief overview of how owls are transported to and from programs. Some owls, like Lady Grayl, travel on perches. Others, such as her own, travel in ventilated, wood carriers with astroturf perches and removable astroturf floor mats. Ms. Wilson sets up a fan behind the boxes for added circulation. Mr. William Dove, a British Columbia educator, travels with his owls and other raptors on the road for a month at a time across the province. "Obviously, people such as ourselves who care about owls as much as we do make sure the owls are as comfortable as possible on the road. We get the kids to thinking about how the birds can overheat and become dehydrated in hot, dry buildings, and often cool down the room ahead of time. But, everyone always wants to know, 'Do they live in this box all of the time?'" She asked Ms. Wiebe to hold up the Great Horned Owl's carrier.

Ms. Wiebe: She explained this new type of soft-sided, lightweight traveling box that MWRO is trying. It has a wood frame, and a nylon, breathable, removeable cover that stays dark inside, yet goes into the washing machine.

Ms. Wilson: "Let's end up with owls on line and a discussion about how information is being dispersed and how all of us can communicate a little better. Clearly, one reason we educators, and some of us are researchers as well, are here at this symposium is to recharge our batteries, gather information as fodder for our programs, and keep abreast of research work that's being done on different species or various aspects of owl biology. Our challenge is to interpret this information into terms that can be understood by different age groups. How is the Internet being used to disperse information both to you on the panel and to kids in the classroom? Do you have your own home page, Norman?"

Mr. N. Smith: Although Massachusetts Audubon does have a home page, he confessed he is not a computer person. His staff takes care of it. "To be honest with you, right now, I'm just looking at these figures here. I figure with 5,000 pellets at $2 per pellet, I owe my assistants about $10,000!"

Ms. Wiebe: "We are on line at the center (MWRO) through member's home computers. I get downloaded articles dropped off to me written by other rehabers. I can also have my own questions posted on the computer bulletin

boards and get responses back fairly quickly, so it's working really well with us."

Ms. Wilson: "Rick, how do you get those kids away from their computer screens?"

Mr. R. Smith: "We're really fortunate to have a computer library with 18 computers available to the students. I work closely with my computer librarian, my best friend, and she bookmarks anything relating to the projects she knows I'm working on. The Internet is really big with kids."

Ms. Wilson: "So, what I want to know is, do the kids take it to the next step? Does it get them out observing wildlife outdoors, or do they search more in the real world? I know a lot of us as educators are concerned that kids are growing up with a perception of wildlife as viewed on a TV screen or computer monitor, and not actually experiencing the hooting of a Great Horned Owl in the wild, or the magic of a Great Gray Owl hunting, or a Hawk Owl plunge-diving, or some of the things that really excite all of us as birders and researchers—the stuff that all of us see.

Mr. R. Smith: As a pretty progressive, small school, he feels fortunate to be able to involve his students in some field research projects. Last year, a fellow teacher involved students with Fort Whyte Environmental Education Center and studied Canada Geese migration and staging behavior. This is an 8-week hands-on program. He wants to involve his grade 6 students more in outdoor experiences, and has written a grant proposal for $20,000 to involve them in a sustainable development project. If the grant comes through, they plan to develop a CD-ROM which could be shared with other schools.

Ms. Duffy: As an interpretive naturalist, Ms. Duffy, while computer literate, believes virtual reality can't match real reality. When asked if the children who go out on her nature walks at Grand Teton National Park in Wyoming recognize wildlife and know something about it already, she responded, "I live in Wyoming where there are Bald Eagles and coyotes and Great Gray Owls and all kinds of amazing wildlife. I ask the kids, 'Do you realize how lucky you are because of where you live? Other kids only see this on television.' One third grader said, 'Yes, my parents remind me every day!' I try to show them that the Internet is a tool they can use to learn about wildlife."

Ms. Wilson: "So, you can just feel her level of excitement. It's as if she has a kids' group right here with her, but that's how educators who are also researchers or are aware of research can get excited with kids and adults and make them want to get out and experience what's left on this planet."

Ms. Scottie Dayton (Ms. Dayton), Editor, Owls Magazine: Ms. Dayton told of a Microsoft commercial that was supposed to be run during the Superbowl depicting a whimsical scene of a girl clutching an injured Great Horned Owl. The father explains she doesn't know anything about how to help it, but she goes to her CD-ROM and learns how to treat it herself in her home. The ad ends with a scene of a healthy owl. The ad gave inaccurate information and made no mention of professional rehabilitation facilities.

Mr. Don Middleton (Mr. Middleton), Educator, MWRO: Mr. Middleton said there are about 850 rehabers that talk through e-mail. Due to objections to the ad by rehabilitators and their ability to mount a massive campaign to remove the ad using the Internet, the ad was not shown during the Superbowl. "The Internet has the potential to mobilize researchers and those who care about wildlife in a way that we never could before. There was mention of people who grow up never seeing a tree. Those people can still care. The way that we're going to educate people is going to be through every device that we have."

Ms. Dayton: "Tuesday, the commercial Microsoft ran in its original form again."

Mr. Middleton: "So, we need to go back again."

Mr. Tom Sprout, raptor researcher and educator, Ohio: Mr. Sprout attributed his work with raptor rehabilitation and research to the interest that certain people took in educating him about wildlife at a very young age. He stressed the need to integrate education and research more at a grassroots level. He often involves the whole community in a project. "They won't preserve it, they won't save it, if they don't understand it. A lot of the researchers I know say, 'I don't have time to bring lay people into my research. These same researchers won't give me money to do my research and these grants are getting cut. The public won't support our research if the public isn't aware of

what we do." Mr. Sprout added a success story where two churches donated time, labor and lumber to build nest boxes for his research. He now has 30 new boxes with which to begin his spring research because the young people came and experienced the Barred Owls in his research project.

Ms. Wilson: "And you got them all the visibility in the community, a lot of goodwill, and you got your boxes. So, everyone comes out a winner on that one!"

Mr. Brian Linkhart, Flammulated Owl biologist and high school teacher, Colorado: Mr. Linkhart uses his research, owl pellets, and hands-on activities to turn kids on to the natural world and science. "It's an opportunity that kids never forget. We all see the world through our experiences. These kids have had profound environmentally oriented impacts made upon them by experiences in the field."

Ms. Wilson: "I'm sure a lot of you can sympathize with the extra effort it takes to take a group of kids out or that extra mile that you do have to go to have the patience with both children and adults, and the development of your own interpretive communication skills in order to teach about a subject that you know so well, but that they really know nothing about. So, it is really worth going that extra mile."

Ms. Duffy: Ms. Duffy offered a handout she had prepared, "Involving the Public—Tips for Researchers", that provides researchers with ways to integrate education into their work. "Think about what's in it for you. Do involve the public. You'll love it, too!"

Ms. Wilson concluded the workshop by reading a passage from Dr. Nero's book, Lady Grayl (Nero 1994). Speaking to the mysteries of owls, she sets the scene—"It is 5 January 1989, midnight,—12 °C; Dr. Nero is in the owl's outdoor pen and the owl is facing southeast very intently"—and reads:

> *"When she turns around, finally, she looks at me only briefly, large pupils giving her a gentle, benign look. But my poking and prying bother her little and she keeps looking around, at times swinging her head suddenly as if a sharp noise compelled her. When the dog, running happily loose in the snow in the night, comes running by, she turns and looks down at him, but without any alarm, then returns to her vigil. I am awed by her attentiveness, puzzled by the forces that drive her, impressed by her seeming spirit of wildness. Is this what the wild owls are doing at this very moment, I wonder? Perhaps the well-fed ones? I should stay out here all night to record what she does, but I'm tired, so I call the dog and go off to bed."*
>
> *When I return in the morning at 7:15 AM, she is sitting in the same place, facing the same direction, apparently still doing the same thing. I am stunned by the awesome thought that this bird can do this through the night. What incredible attentiveness. She is never bored. Every little movement, each little sound, patterns of branches against the night sky, the sound of the wind, these realities and presumably many others beyond our scope excite and interest her."*
>
> *When I think of the long-distance movements of some of our radio-marked owls, as much as 800 km in less than 3 months, I think that these birds have capacities we are just beginning to glimpse. And this tame bird, no less, still has inherited patterns of response, feels things, has inner compulsions. I am witness to a spirit. I realize what little there is beneath this feathered form—a small body, long legs, not a great deal of mass, the brain—no, what we have here is the spirit."*

In closing, Ms. Wilson asked Ms. Braun to walk with the live Great Horned Owl down the center aisle of the room, giving the audience a chance to see the owl up close, ask questions, and to ponder the yet undiscovered mysteries of owls. Just as this beautiful, pale Great Horned Owl starts down the aisle, she hoots, delighting all present, and leaving her own mark on this inspiring workshop.

ACKNOWLEDGEMENTS

In addition to those individuals acknowledged during the Introduction segment of the workshop, the moderator wishes to thank Ms. Sherry Wurtz, college student, for taking notes

during the workshop and Ms. Scottie Dayton, Editor of Owls Magazine for providing a tape recording of the workshop. This detailed transcript of the workshop would have been impossible without their valuable documentation. Warm thanks go also to Jean Scriven and staff of the Manitoba Wildlife Rehabilitation Organization for their participation in the workshop and their growing educational efforts.

LITERATURE CITED

Cruickshank, H. 1964. Thoreau on birds. New York, NY: McGraw-Hill Book Co. 331 p.

Nero, R.W. 1994. Lady Grayl.: owl with a mission Toronto, Ontario. Natural Heritage Books. 176 p.