Patuxent Science Symposium
75th Anniversary
October 13-14, 2011

This transcript is Part 1 of 4 and features the speakers listed below for the 75th Anniversary of the Patuxent Research Center. They talk about their work and experiences while working at Patuxent.

Patuxent Science Symposium
Thursday Brad Knudsen introductory: Greg Smith

Brad Knudsen:
Welcome to Patuxent Research Refuge, Patuxent Wildlife Research Center. My name is Brad Knudsen; I'm the refuge manager here. And I have the honor of getting to say the first few words before I turn it over to Greg Smith, and then our moderator for the day, Dave Trauger. So with that, I'll just get started on a few words.

I always believed it's a privilege to be working for the U.S. Fish and Wildlife Service and in particular the National Wildlife Refuge System. Upon arriving at Patuxent Research Refuge 11 years ago, that privilege quickly became an honor as refuge manager of one of the refuge system's 553 units, totaling over 150 million acres, the largest network of lands anywhere in the world dedicated to wildlife conservation.

To work at the only refuge whose defining purpose is to support wildlife research, and to have that research delivered by the Patuxent Wildlife Research Center, one of the premier wildlife research entities in the world, indeed makes Patuxent a very special place; a very special place with a very special history.

Over the next two days we will be celebrating, learning, and reminiscing about that history, and the many significant contributions Patuxent has made to the world of wildlife science in the past 75 years.

Just as importantly, on Saturday our celebration culminates in our annual joint wildlife festival, where we will share our history and our passion for wildlife, natural resources, and the great outdoors with the public. And by the way, a sincere thanks to all of you who are offering your services, expertise, and time for that public event on Saturday as well.

I've already had so much fun this morning, I've decided that this is the first annual 75th anniversary celebration and we're going to do this again next year!

With that, I want to introduce my counterpart, Greg Smith, Center Director for Patuxent Wildlife Research Center; Greg.

Patuxent Science Symposium
Thursday
Gregory Smith introductory: Dr. David Trauger

Gregory Smith:
The stock market is falling, millions are unemployed, the mood of the country is at a historic low. Now these could be the quotes from today's *New York Times* or the *Wall Street Journal*, but they're not.

In 1936, Americans were seven years into the Great Depression. There was 21% unemployment, low profits, deflation, poverty, and a complete loss of personal economic growth. Yet, conservation visionaries like Jay Norwood, "Ding" Darling and Ira Gabrielson persuaded President Franklin D. Roosevelt to convene the first North American Wildlife Conference, thus launching a new era of wildlife conservation.

At a time when America was hurting the most, these leaders created a movement, a movement that was driven by the wisdom to invest in our nation's natural heritage.

They passed legislation, they created parks, they created wildlife refuges, and they created Patuxent. Now, 75 years later, they serve as our inspiration.

While the news networks run daily features of a failing economy, and the federal workforce is being reduced, and programs are being cut, we can all look to those leaders of 1936 for inspiration, inspiration in conserving our nation's wildlife and wild spaces.

Patuxent has, and continues to have, a very special role in developing the science needed to drive conservation.

Today, Patuxent scientists are developing innovative solutions to wildlife and conservation challenges.

And this morning we are very honored to have so many Patuxent alumni with us, and to share with us their memories of the past. And I'm very confident that these will help inspire us, just like "Ding" Darling and Ira Gabrielson did before us.

So today we're looking for inspiration, and I know that we will develop the optimism, the optimism needed to continue our critical mission into the future.

Now this morning I'd like to thank the Friends of Patuxent, our hosts and sponsor, and Emy Holdridge, who's the chair of the board. I'm not sure Emy is here this morning, but if there are board members of the Friends, would you please stand up, or if you're in the

back holding a camera, wave your hand. Thank you very much; [Applause].

I also have a very special thanks to Matt Perry, who's organized this symposium and who's chaired our anniversary committee that has been made up of both refuge and center personnel. Matt, thank you so much. And could we have you and the anniversary committee please stand to be recognized; [Applause].

A lot of people have put a lot of time into this, this very special time here at Patuxent. And I want to thank everyone at the center and at the refuge for really rising to the occasion and making the next three days a very wonderful and special event.

But before we get on with this morning's program I would like to have (some of you won't be surprised) Marilyn Whitehead come down with Nell Baldacchino, Shannon Beliew, and Kinard Boone. Please join Brad and me up here in front; [Applause].

[Presentation of gifts and applause].

Brad Knudsen:
Tremendous energy from the whole committee, and they were really the (heck, one of Greg's notes: 8:46) called these folks the super heroes of the committee, and it really is so true. So much energy and time, and they're thrilled to know they're going to be doing it all again next year! Thanks so much; [Applause].

Gregory Smith:
Thank you again. And Brad was just kidding, it won't be next year. On December 16th is actually our official anniversary.

Audience:
What!

Gregory Smith:
So read the executive order! So this is a good prelude, and a good lead up to our anniversary. So, let's keep those four on staff here!

We have a few other special folks that I'd like to recognize. Some of you may remember the ninth director of the Patuxent Wildlife Research Center, Judd Howell, Judd; [Applause]. And again, we'll continue our dialogue about all those things you left in my desk!

Dr. Susan Haseltine is a retired associate director for biology, USGS; Sue, good to see

you; [Applause].

Oddly enough, we have another person in the audience who left things in his desk that I had to deal with, Robert Stewart. Bob, you and (Roma: 10:21**)** came all the way up from Lafayette, Louisiana; former director of National Wetlands Research Center. Thank you for coming; [Applause]. Bob will also be leading our Patuxent Reflections Session when we have the campfire tomorrow evening. So, that's wonderful.

Have I missed any other folks that have been directors at Patuxent?

Audience Response:
Jim.

Gregory Smith:
Jim? Where's Jim?

Jim:
I'm hiding.

Gregory Smith:
Jim Kushlan, Jim, Dr. James Kushlan; [Applause]. Good to see you again Jim.

Jim:
I have five years hiding in there!

Gregory Smith:
I think you left things in that desk that Judd left, that.., never mind, we'll go into that later!

Well again, this is a wonderful time of inspiration and optimism; a time that we certainly need given the mood and the tenor of the economy and all things that press on the American public.

But I couldn't think of a better thing to do, to continue the important work of the science, the research, the conservation efforts than to recognize those in the past that created programs that built this center.

We're going to hear from someone who was here, I wouldn't say at the creation, because

Dr. Chandler Robbins was here before the creation! And we're going to have some great stories tonight. But let's recognize "Chan" for 68 years of service; [Applause].

I have to tell you that Chan serves as my inspiration every day when I see him come in, and it's fabulous. Thank you, Chan.

So, without further adieu, it's my great pleasure to introduce the sixth director of the Patuxent Wildlife Research Center, our moderator for today's session, Dr. David Trauger; [Applause].

Patuxent Science Symposium
Thursday
Session Moderator: David Trauger

David Trauger introductory: Dr. Matthew Perry

David Trauger:
Good morning, everyone. It's a real honor to be here today to help celebrate the 75th Anniversary of the Patuxent Wildlife Research Center.

I was the director when we had the 50th celebration. And I really want to be one of the first to thank Greg and Brad and Matt and Marilyn and everybody else who's had a big role in making this happen. This is really wonderful, and it's great to see so many friends here.

It was, I guess..., part of my relationship with Patuxent is that I'm kind of one of these 'tween people. And I have known and worked with many of the early Patuxent researchers, Bob Stewart, Paul Springer, Chan, and others, and then to be involved with recruiting the next generation to follow. And now there's several more generations of scientists who've come here.

And Patuxent has had a, as Greg has already stated, a fantastic contribution to wildlife, science, and conservation biology over its history. And it's really wonderful to be a part of this. It's a fantastic legacy and I am looking forward to hearing all the presentations of the speakers today, to learn again some of the outstanding things that are going on here.

I'm going to play the role of moderator. And one of my tasks as moderator is I've got to help keep us on track, and so that's one of the reasons why my comments are going to be limited today. We've got a tight agenda. The speakers have been told they have 15

minutes to make their presentation. We'd like to preserve five minutes or so for each talk, for questions or comments or discussion. So, what I'm going to do is I'm going to time the talks and when 15 minutes comes up I'm going to come over here and I'm going to make sure we keep on track so everyone has a fair opportunity to do..., participate in the discussion.

So moving right along here, our first speaker is Dr. Matthew Perry. And Matt is going to talk to us about the formative years of Patuxent, and the construction of the buildings and the research areas that took place.

And Matt has worked at Patuxent from 1971 through today, and has played a major role in many of the migratory bird research programs here as well as contributed to the history of this, recording the history of the center.

And Matt, it's a great honor to introduce you this morning; [Applause].

Dr. Matthew Perry:
Thanks a lot Dave, I appreciate that. And God's going to help me get this all set up.

I'm going to talk about the early years, following up on what Greg said about why Patuxent was created. I want to go way back in time and talk about those formative years and why Patuxent was so important, not only to the whole Fish and Wildlife Service, but to the whole world in establishing the good science that goes into wildlife management.

So, when you think about all the refuges in the country, all of them do wildlife management, but this area was set up as a wildlife management research area. So it's important to think about our history in that regard.

Of course, we know that a lot of what formed this was the drought in the Dust Bowl era. We went through some very hard times in this country that was coupled with the Great Depression, misuse of the land, and wetland drainage that was extensive throughout the country.

It was these kinds of activities that got everybody so concerned in the 1930's with the conservation effort throughout the country.

Here in the east it wasn't as bad as the west. This is a picture of back in the Snowden days, before Patuxent was formed, with Frank and Bill Hobbs out getting hay on the field right in front of Gabrielson. These are relatives of Marilyn Whitehead and Rose Whitehead, who's going to be here tonight, and, of course, a lot of you remember Tom

Hobbs back in the good old days. But these are some of the people that were working on the land before Patuxent was formed. That's looking out from Gabrielson. At that time John Snowden was a resident here, he was the last of the Snowden's, he died in 1928, and his land went into misuse for a while until the government took it over and created the refuge that we know today.

This is the largest building that was on the area when the government took it over, Snowden Hall, how it looked back in the early days before the additions were put on both sides.

But the important thing at that time was what happened on December 16, 1936. This is when President Franklin Roosevelt signed the Executive Order 7514, that transferred land that they had gotten through the Resettlement Act, to USDA to effectuate further the purposes of the Migratory Bird Conservation Act. So you can see where our roots were closely tied in with migratory bird work.

Greg mentioned Ding Darling; Ding Darling was a cartoonist from Iowa that Roosevelt brought to head up the Biological Survey and to get things moving in trying to get some conservation activities going on.

His close friend and associate was Ira Noel Gabrielson (the Gabrielson Lab is named for). He was considered the founder of Patuxent Refuge along with Ding Darling. He also became the Chief of the Bureau of Biological Survey after Ding Darling resigned, and then later became the Director of the Fish and Wildlife Service when that was formed in 1940.

Our first superintendent, which later became known as the director (the reason he was called superintendent is because he wasn't heading up research at that time, research was being headed up in Washington) was Dr. Leland Morley.

He was a veterinarian by profession, but he was the man that's mainly responsible for all of the road construction, a lot of impoundment construction, and most of the early building construction.

And he served for 12 years, which is sort of a long time; no director has come up to that level yet, so. Maybe it's related to the fact that he wasn't supervising researchers, that maybe he could last a little longer!

Our dedication didn't take place until 1939, June 3rd, in front of Snowden Hall, which a lot of times we consider the back because we come in the front, which is actually the

back, which is a little confusing. But the road originally went on the other side of Snowden.

But some of the key people that were involved with this, of course, were Ira Gabrielson, who's right in the center here, and then also Henry Wallace, who gave the address that day, he was Secretary of Agriculture. We had already been transferred to Interior. But Agriculture, because of their big influence on our history, he gave the major address that day.

This is what our entrance road looked like. We've got an automatic gate now and a guard house and we also have a red stop sign, so some things have changed. The sign that you're seeing over on the front was one of the first signs we had here, and you can see the flying goose, showing us one of the refuges.

The Bureau of Biological Survey was transferred to the Department of Interior in 1939. And the important thing there was that we were reflecting the change in the country. Where people were less concerned about what problems wildlife was causing to people, but we were more concerned about the problems people were causing to wildlife. So it's a major change, going from Agriculture to Interior.

And then the name changed to the Fish and Wildlife Service in 1940. And it wasn't until 1956, where Congress actually established the U.S. Fish and Wildlife Service and established two bureaus under that.

And this is our entrance road. There was a lot of early concern about how we looked. That has changed over the years back and forth, whether we should be managing the place for wildlife or appearance for the public.

This is a picture of some of the buildings that were created in 1939 and '41; Merriam Lab, Henshaw Lab, and Nelson. They were named for the first three chiefs of the Biological Survey.

This picture was taken in the 1950's. Snowden Pond wasn't built when the buildings were built, but it was built after by the **Conscientious Objectors** that were stationed here during the war.

So after the construction was completed, World War II broke out, of course, in '41, so we lost a lot of our staff. The Conscientious workers and the Public Service Program stayed on and built Snowden Pond. And that was originally built for firefighting for the buildings because we didn't have water at that time. And the old pump house was right

there on the edge of Snowden Pond. Snowden Pond was a major facility and it was used for fishing in the early days also.

The Public Service Program ran throughout the war years, from '42 to 47. It was involved with a lot of conservation programs we had here.

Here's an early picture in 1956 that shows you some of the buildings. And interestingly, you can see where the road comes down behind Nelson Lab. It came down and came in between Henshaw and Merriam Lab at that time; sort of an interesting, a change that took place over the years.

The early people established a grid system on our land, which is still here today. And it's one of the great things. That someday, if the satellites ever fall out of the air and we don't have GPS anymore, people could go back to using these more.

But this is a beautiful hundred meter system that is established throughout our area. Many people like Chan Robbins and other people have extensively used them for bird surveys. But the whole early section of our facility, the 2600 acres, was gridded. And then since that, it was also gridded again to the additional land.

Neil Hotchkiss was a Royal Botanist, and one of the people responsible for a lot of the new, the vegetation work that was done in the early days.

Frances Uhler was one of our early biologists that came from Washington, The Biological Survey. He moved out here in 1940, and retired in 1985. Forty-five years of service here, and living on the center all those years. He was heavily involved with a lot of reptile work. Also during World War II, because he was older than a lot of the other people that were drafted, he stayed on and was involved with fur research. And a lot of this research was tied in with our service men that were in the Arctic areas. We were trying to find insulative materials that could help them out during the war years.

Chan Robbins was here in the early years, and also Durward Allen. We had what was known as the Farm Game Program, which was actively trying to find better ways that farmers could help wildlife on their land. They established hedgerows, buffers, and exotic species.

And a lot of this area wasn't the most scientific work that was done in those days based on what we think of today, but there was a lot of great work that came out of that. And a publication that Durward Allen wrote, called *The Farmer and Wildlife,* was printed ten times, and it shows the great use that was gotten. Wildlife Management is who printed

this because they thought how important it was to get this word out to the farmers on how to help wildlife on their land.
Some of these studies actually conducted harvest studies on our property, where they actually went out and shot rabbits and quail. And then they were also doing tagging surveys, some of the early tagging surveys that were done with ear tags in tranquilized animals that Leonard Llewellyn did.

There was a lot of emphasis to clear the land early because most of it was forested. So some of the old equipment like those chainsaws that were used by two men, some of the real antiques, they cleared a lot of land. They used dynamite to blow up the stumps because they didn't have good bulldozers at that time. And there's still existing on our property, a dynamite shed, which is a good distance from the other buildings. But then there were also some of the early bulldozers that were used to cultivate the land.

They spread lime on the area because early on they realized that our ponds were acidic. This was before the term "acid precipitation" came along. But because of the tannins from the forest and all, our areas were fairly acid. And Fran Uhler, when I first came here, told me how important it is to keep that liming up on the land.

We also had animals here that were used; a mule and horses that were used to help the farming. A lot of corn was planted and harvested along with the wheat. And a lot of this went into feeding wildlife, which we did in the early years, but also using it to plant for the next year.

One of the reasons that we were so concerned about migratory birds is because the wood duck was the only species that was native on the land at that time. And it was mainly because we were forested and we had the forest river going through our property.

So we had a lot of work going in an island creation in the impoundments. This is Bill Henson, who was operating the tractor, creating an island. They took clay from the area right near Blue Gill Pond to line the dikes in the early years. They made these controlled structures on each one of the impoundments. This is the impoundment in the back there, it hasn't been flooded yet.

And then they had..., on the left is one is one of the earlier managers; on the right is Frank McGilvery, who's still on our staff. And he was plugging up some of the leaks in the dike using a vegetation that was special for that purpose that Fran Uhler had specified.

This is what the impoundments looked like after they were created.

Then you invited the boss out from Washington; Mr. Swanson was a good "Swede" and Arnold Nelson was a good "Swede" too, and they had good "Swede" stories. And if you ever want to hear some of these old Swedish stories, you want to talk to Ray Erickson because of some good old stories that went back in those days between some of our early people. And Nelson became the director after Morley, and served here from '48 to '59.

This picture is of some of our complexes, what they looked like in the early days.

The Island Marshes were later changed to the Uhler Marshes. And this is the same area where the hog folks were farming out in the front there.

Uhler tried to plant wild celery for many years, but we never succeeded. One of the plants we did have quite extensively here was wild rice.

Unfortunately, wild rice essentially disappeared, but it wasn't until recent years when one of our scientists here, Mike Haramis, discovered one of the problems. It was the resident geese that we had established here that wiped out our wild rice, just like it did throughout the Patuxent River. So it was a major finding that Mike Haramis discovered just recently. And unfortunately, because we have resident geese here, we don't have any wild rice.

We did a lot of work with wood ducks. We used the original Belrose Box originally. This is Clark Webster on the left. And on the right he had raccoons that were trained to go into boxes to feed, and then what he did is he put a predator guard on them to see if he could keep the raccoon out. So a lot of emphasis was on keeping raccoons out of nest boxes originally.

But then there was also a problem with starlings. Frank McGilvery came up with a starling deterrent box, which isn't used too much, unfortunately, because wood boxes are a lot more fun to make by boy scouts and other people. But this is probably the best box you could create for nesting wood ducks.

And some of the early work was done with web tags where the ducks could be tagged with a small fingerling tag.

And then we did our first telemetry study here at Patuxent. I instrumented this wood duck back in the early '70s with transmitters that we were actually building here. And you can see that we took a spring from the old ballpoint government pen to help reinforce the antenna.

We had interesting imprinting studies; we were trying to get Mallards and black ducks to use the nest boxes in the early days. And this was an interesting study that hasn't been followed up by other refuges.

This is the last nest box that Fran Uhler put up on the center.

And then in 1948 we brought white geese here. And that was considered a problem by a lot of people, and still a major problem throughout the east with the resident goose population, which the states are trying to cut back.

We had a nesting..., a neck collar program that McGilvery started; Bob Munroe followed up on a lot of that work. And we had this going on for a long time, until the local golf course called us up and said, "Come get your geese." And this got Dr. Stickel very nervous and she told us to stop neck collaring the geese. She didn't want them to be identified as Patuxent geese any longer.

We also did web tagging studies with geese; and you can put a wire enclosure around the nest just before, one day before hatching and then you can capture all the goslings and web tag them.

This is a typical nest basket that was created in the early days by Fran Uhler; geese are just jumping out of it; Holly Obrecht checking this later when he was refuge biologist.

But then the program ended. We got a letter from the state asking us to no longer put up nest boxes, nest structures for geese because of the problem with the resident goose population.

A lot of the impoundments became overgrown with Brasenia and water lily and other floating plants. And so what we had was a drawdown program, and we developed a program here called Moist Soil Management.

This program has been used throughout refuges throughout the country. But it's interesting, it was started right here by Fran Uhler and Frank McGilvery and some of the early people to get our programs established. It was good for weighing birds originally because they ate some of the fish and frogs, tadpoles that were left over. But then we had annual plants that came in, like the red-rooted sage (Cyperus erythrorhizos), which was very important for our duck food, and also smartweed (Polygonum), that the ducks love to get.

We had problems with, we thought we had problems with snapping turtles, but all the

food habits work that Fran did showed that it wasn't a major predator on the waterfowl here. As long as you have good populations of waterfowl, it's insignificant. But it did create good lunches, and Fran was known for his turtle stews that he created, and a lot of people enjoyed that in Merriam Lab.

The black rat snake was a major predator for our nesting of waterfowl nesting ducks, and that's why we were trying to get the ducks to nest in the nest boxes. And Bill Stickel did a lot of the work in looking at the population of black rat snakes at the same time that his wife, Lucille, was working with the box turtle.

We discovered the first beaver in 1974 on the refuge, and it was a major thing. And since then the population has increased dramatically. They've caused some problems here. Some of the biologist that... Well, I think we were getting ready to sacrifice them, it's before we had our present safety regulations, and they're trying to get rid of the beaver debris.

Bill Stickel was heavily involved with PEPCO in the early years, getting the power line that they wanted to put through here established so that it would be good for wildlife.

We did not want them to use chemical sprays because of the contaminant programs we had going on. So we talked PEPCO into creating a vegetation control with what we call selective basal spraying. They only kill the trees that would grow up to be tall.

And so what we established was a beautiful brush habitat, which creates a tremendous amount of habitat for the song birds that migrate through in the spring and the fall. And it's a major area that our biologists have been banding in for many years.

So that was an important part of our project that continues today.

We're not going to talk too much about the bird problem studies today. But that's now with Agriculture, but that was a major program that was headed by John Seubert here, and Brooke Meanley was one of the key biologists. And Brooke and other people developed this decoy trap where they could trap blackbirds. And a lot of those blackbirds were used on the studies that Bill and Lucille Stickel did in the early years.

I'll just conclude with one other program; the Fish Stocking Program we established. We put fish on a lot of other refuges that needed fish that were getting established, and we also had an early fishing program. That was curtailed after we got into a lot of nesting work, but then it was recently reestablished by the refuge system.

So I just want to end with this picture of Snowden Hall. It's still standing, although it's in a little disrepair right now, and reminds us that Patuxent was established to effectuate further the purposes of The Migratory Bird Conservation Act. Of course, since then, we've had the Environmental Protection Act and the Endangered Species Act, which are major programs supporting our research here.

But it's important to note, Patuxent was way ahead of the game, because our contaminant work was started in the 1940's with the Stickels and other people, and way before the Environmental Protection Act established the agency. And also, our contaminant..., our Endangered Species Program was started in the 60's here, before the Endangered Species Act.

So we have a lot of great history to be proud of, and hope..., hopefully throughout this week you're going to hear a lot more of the research that we've conducted in the last 75 years.

Thank you.

David Trauger:
Any questions for Matt or any comments?

Thank you, it was really comprehensive. And I think you made a good point about the fact that Patuxent really was the incubator research center. And many of the other wildlife research centers that came as a..., came about later in the history of the Fish and Wildlife Service actually were spawned from the pioneering work here that was done.

And one of the areas you didn't mention was the disease work, and establishing the National Wildlife Health Center and the programs at the Denver Wildlife Research Center with animal control, you did mention that.

But it's..., Patuxent certainly was very important in pioneering some of those diverse wildlife research programs.

Patuxent Science Symposium
Thursday
Session Moderator: David Trauger

David Trauger introductory: Dr. Chandler Robbins

David Trauger:
We'll move right along here; and our next speaker is Dr. Chandler Robbins.

Chan has personally been involved in many of the avian studies at Patuxent since he started working here in the 1940's.

And Dr. Robbins is going to discuss the earlier studies and how they have influenced many of the studies that are presently being done.

Chan, it's a great honor to welcome you to the podium.

Dr. Chandler Robbins
It was real exciting to a young fellow just shortly out of college to arrive here at Patuxent in the early days. There was no Patuxent, there was no Fish and Wildlife Service, there was no... The Chief of the Fish and Wildlife, Ira Gabrielson, was fortunately very much interested in Patuxent, and so he was out here almost weekly working with biologists, and he kept his own collection out here.

So it was really a fantastic experience to feel that you were at the ground level of a brand new research station, a brand new area, a big fence all the way around it. And the grid system, all the collections that were here in those days. The collections have since been moved, mostly to museums in Washington. But at that time the collections were still here.

For 45 years the biological survey had been doing bird research, and a lot of it was involved in food habit studies. The studies were suddenly terminated by Congress in 1943, and a lot of the early staff that was involved with that also disappeared.

The grid system that Matt mentioned was a fantastic grid system, especially in those days. When the plot lines between markers were still clear, you could stand at a marker and 100 yards away you could see the marker to the east and the marker to the north. When the trails were still available we used these as census trails for all the bird study work at Patuxent there, again as the markers, these markers are still present; almost all of them are still present. You could go back to places where you had bird sightings 50-60

years ago and stand in the very same spot; you can repeat study sites that we had done back in the 1940's.

Our first big project using the plot lines was to map the breeding population of all the breeding species of birds in our 2,600 acres. This shows a map of the Redstart that we had in that first survey. Redstart was a common bird throughout the floodplain; they're much scarcer now than they were then. The Prairie Warbler was one of the common birds in the field edges; they're practically all gone now. The Kentucky Warblers that were throughout the floodplain have almost totally disappeared because the habitat has been destroyed by overpopulation of deer.

Bob Stewart started the annual Christmas bird counts at Patuxent back in 1941, and those counts are still going on every winter.

Notice here, the big change in the population from winter of '43 to '44; and the chart shows the distribution of the various families. You can see most of that change was the result of the sparrow families. So that was, '44 was a big year for sparrows.

The next thing we did was to do intensive studies of bird populations in individual habitats. And to do this we used spot mapping, where we were making repeated trips to the same area and outlining the breeding territory of individual birds.

So this was done in all of the major habitats, this information was published in a publication study in the 1950's.

Then we did seasonal population changes, where three of us would walk parallel 100 yards apart along the plot lines, and keep a record of which habitat, or how many birds were detected in each habitat as we hiked the 2.5 miles for the survey. This started at the pear orchard and proceeded west through the Ralph Nestler's quail pens to the west boundary fence, then north to the Patuxent floodplain, then east for a mile through the floodplain, then south through the big field below the headquarters, over to the Snowden Creek Valley, and then up the Snowden Creek Valley to the new entrance drive.

We started recording nests on a nest card. We're still doing that. In fact, after using the card at Patuxent only for a while, we enlarged the study to include the whole state of Maryland and ultimately Cornell Lab picked up the program and they're now collecting nest records from all over the United States.

So, quite a few projects that were started here at Patuxent have since become continent-wide programs.

We were interested in methods of trapping and banding birds, we didn't have mist nets in those days, all the trapping was by actual traps. We spent days and days hauling water around to these traps, using dripping water to attract warblers. And we had two big Australian crow-type traps that were used for banding vultures and large numbers of blackbirds.

At the start of Patuxent, we were still using Agriculture Department bird banding schedules. For every bird we marked out on the plot from the vegetation map where the bird was captured, so we have a permanent record of just where each bird was marked. (Both: 42:50) the band numbers we had a prefix of bands, and just changed from a signal of alpha code to the calendar the year in which the band was manufactured, this was 1934.

One of the early projects was to map the banding encounters from the records of the banding lab. This was started by Patuxent staff, and then spread to other organizations.

I started a series of cooperative fall migration hawk counts in the eastern states at concentration points along ridges and shorelines and so forth. We repeated this study for a number of years, and then we finally organized the Hawk Migration Association, and they continue to work and are still publishing hawk migration records from the entire continent every year.

For five years we were heavily involved in DDT studies. They sprayed DDT at the rate of 5 pounds per acre in one year and could not detect any change at all because the DDT was deposited on the top leaves of the canopy, and never reached the lower levels, where most of the birds were. So we repeated the study area over adjacent to the Ag Center, where there was some brand new young forest (the old forest had just been wiped out by a forest fire). And so this time the forest..., the spray actually reached the ground where the birds were. And as you can see here, comparing the sprayed plot with the controlled site, there was a marked decrease in population of Yellowthroats, I can show you similar maps for other species.

As part of the DDT study, we had to record mortality of nests and so we erected a large number of bird boxes. Again, there was no effect of DDT recorded at the bird boxes. But by having the boxes there we were able do some intensive studies of the bird populations. I had a bluebird study for three years in a part just below headquarters, and each bird is identified here with individual letter.

And if I can call your attention down to the bottom line, I gave a paper at the North

American Bluebird Society and pointed out that bird 4D down there, male bluebird #4 was mated with his grandmother! And of course it turned into bird studies.

Incidentally, we did a lot of collaboration with other scientists. If we spotted a large tree we would make a note of it and then go back later and check the diameter and see whether a record tree for Maryland or even the champion tree for the United States.

Whenever we encountered a snake or a turtle, we would bring it in and deposit it into the sink of the person who was studying that particular species, together with a note showing the precise location point where we picked up the animal. One of the box turtles that I brought in for Lucille Stickles and Mark was 82 years old the last time the turtle was last seen walking around. It may still be alive today, I'm not sure.

We did some collaborating with other organizations such as the National Harbor. And I won't go into the details, but I ended up as editing the breeding bird census plots for Audubon for 40 years. In doing this I got well acquainted with all the people doing field studies throughout the United States and Canada. So when it came time to look for state and provincial coordinators for the breeding bird survey, I knew exactly whom to contact. And practically all the people I contacted were happy to act as coordinators to get the survey off the road.

Just a few of the people were involved in the bird studies in those days, which were under the direction of Bob Stewart until he transferred to Northern Prairies Research Center.

In the 1950's, the Fish and Wildlife Service was still primarily interested in waterfowl and other game birds rather than the songbirds. The state game departments did not even have songbird specialists except for the state of Massachusetts. The emphasis was totally on game birds.

I was one of four people asked to develop a survey for mourning doves. Harold Peters, Leonard Foote, Howard Duvall, and I were out in the field here in Maryland and Pennsylvania and down in the southeastern states, developing a survey method for mourning doves. And we found out that the ideal time to start the mourning dove survey was a half hour before sunrise. But there was disagreement among the four of us as to when to start the official survey. I was in the minority, I lost out. And they said that a half hour before sunrise was too early to ask people to get out and count doves. So forever on, the survey starts at exactly sunrise instead of a half hour before.

I did woodcock studies for a few years. And the Fish and Wildlife Service could not have an open season for snipe unless they had someone studying snipe, so I was snipe

biologist for a half dozen years, developed a survey (unclear: 48:15). I spent my winters doing surveys for snipe in the Gulf Coast states and in the summertime working the Canadian Provinces, all the way from the Maritime Provinces to the Northwest Territories and Yukon.

And of course in these studies I had a lot of spare time during the middle of May, the long summer days, because the snipe work was at dawn and dusk. So I spent the rest of the day with my tape recorder, recording songs of songbirds because I was interested in the regional variation of the songs of individual species. So it wasn't until a number of years later that I got involved with writing a field guide of the information that I obtained from all of my recordings. It proved very helpful in the field guide.

I was interested in what time of day the dawn chorus started for individual species, so I was studying that. And this was long before I thought of developing a survey to measure breeding bird populations.

I was also interested in the number of songs per minute that different species give. I go over that in more detail in the proceedings of the symposium, but I can't go into detail at the present time.

I was interested in learning what I could about fortifying nocturnal migration. We borrowed Navy radar, which was set up at the Nelson Lab, but the smallest thing I could pick up with that was the Bay Bridge! We spent many evenings over the Washington Monument, catching and identifying the birds that were hitting it and falling to the ground. This was where I learned how to identify the call of the birds when they're migrating, which are very different from the calls they use during the daytime.

We did telescopic counts of birds crossing the face of the full moon in a study that was coordinated by George Lowery at Louisiana State University. And it turned out that one of my counts was the highest count ever recorded in North America of birds flying over a certain place at night. I had a record of 230,000 birds per square mile flying over my house on September 22, 1953, and it indicates that Patuxent is very well located along major migration route for songbirds.

We did a lot of work on the study methods of aging and sexing birds in the hand, and writing instructions for banders on how to identify birds.

Here you see pictures of the outer tail feather of 12 species of Dendroica warblers. Every one of these birds can be identified by a single tail feather if you have the bird in your hand.

While I was studying albatross populations at Midway Island, the Navy provided funding for us to work over there for ten years. This is another story which I don't have time to go into in detail.

Fortunately, the birds returned very closely to the same place. Probably a quarter or more of the birds returned to nest in the very exact same spot every year, which made it easy to study the population. The only problem was once these birds go to sea, the young birds, for the first time, they stay at sea for several years before they start nesting. So it's not until they're seven or eight years old that most of the population is actually back on land. And the young birds come back to nest very, very close, within a few feet of where they were hatched. If you study a bird like this is a long lifespan, it takes forever to get the information you need about how the birds actually become...

Okay, I'm getting to the end here! This was some land management over there.

We finally solved the problem at Midway by having the Navy pave over a huge area alongside the runways to keep the birds off the runway and cut down the dunes that were providing transfer to support the birds in flight.

I just had to mention my 60-year-old albatross minute wisdom.

And we're all through with the slides and I will thank you all for listening.

David Trauger:
It pains me to have to get up here and stop this because I think we could have listened to you all morning. This was wonderful. I'm really sorry. We do have to move on, but thank you so much.

Patuxent Science Symposium
Thursday
Session Moderator: David Trauger

David Trauger introductory: Dr. Russell Hall

David Trauger:
Our next speaker is going to be doing this via the technology here.

Dr. Russell Hall is going to be giving a talk about his early, the early contaminant research here at Patuxent, especially the work by Bill and Lucille Stickel.

Russ Hall was a scientist in the Contaminant Program here from 1977, through 1989. And he also was involved with the administration of the research at the Center as the deputy director. And he also had a stint as acting director.

Russ and I have been communicating pretty regularly, and he sends his regards, and unfortunately his schedule and other commitments prevented him from being here. But through a video he made, we're going to have a presentation.

Dr. Russell Hall:
... at Patuxent to celebrate this important 75th anniversary, was unable to schedule. This has been a busy year. For those of you who are still employed, though some may learn that retirement is a full-time occupation. In recent months we've been doing long-distance hiking, we did a 300-miler, traveling, attending conferences and seminars, writing, speaking, and offering a course at our community college. We also have a book in the works, scheduled to come out in March based on our hiking.

The main issue that has caused me (unclear: 57:36). Several months ago a friend and I got a grant to write a guide (unclear: 57:43) national wildlife refuges. Getting a grant is a good thing because of course it brings money and lets you do lots of things you couldn't do otherwise. But what it has done for us is giving us very difficult deadlines, and what we're having to do is to do all 12 (unclear: 58:00) trails and get the navigation right and biology right, and get our materials in asap, which is like last month.

So anyhow, that's been a major undertaking. And I couldn't attend your celebration, but I hope that this video will at least convey the purpose that I very much want to celebrate with you.

With all that said, onto the business of the anniversary presentation. I was asked to speak

on the topic, Early Population and Contaminant Studies.

By way of disclosure, I have to confess that I have no direct knowledge of either of those topics. I arrived at Patuxent in 1977, long after those times were already history, 30 years later as it were. And the information I provide will necessarily be secondhand. That's probably okay because almost no one is still alive with the possible exception of Chan Robbins (unclear: 59:03) firsthand accounts. So I suppose I'm as good as anyone to do this.

Much of what I know about the early years of Patuxent's programs came from conversations that I had with Lucille Stickel during my years at Patuxent. Also, I was fortunate to be able to discuss these things with Lucille a few months before she died.

The remainder of the information comes from printed materials. And during my time with Patuxent I was involved in a couple of projects where I had to look up some of this stuff. So much of what I will be telling you is based on some of that earlier work.

The written records are more objective, of course, but I think some of the anecdotal information may be more insightful.

Okay, as you have probably already heard and will probably hear many more times today, Patuxent was established in 1936 as a so-called research refuge. Unfortunately, I haven't been able to find any documentation as to what was going on in the minds of the people who came up with this. The term "habitat restoration" as an emphasis has been used, and I think this is probably part of it, but I think there's probably more.

To get some fuller understanding of the original purpose of Patuxent Refuge, it may be necessary to consider what things were like in 1936. Think about the Dust Bowl, think about the Great Depression, and think about also the fact that at that time many more people and much more land was involved in agriculture than at any time since.

Populations were increasing, and it was taken for granted that agricultural production would have to increase also to provide food for all the new people that were coming on after the Second World War would be coming on.

Agriculture already dominated much of the nation's landscape. And by today's standards, it was inefficient, wasteful, and harmful to the environment. Unless there was some major change, America's wildlife would continue to feel increasing pressures from agriculture.

In response to the array of ongoing and impending problems, the U.S. Department of Agriculture was growing and was promoting scientific harmony.

It was really looking at two ends of the problem; on one end waste of increased productivity, and on the other end ways to decrease the loss of natural resources. And, of course, the Soil Conservation Service was developed to promote the conservation of soil and water. And the Aerobiological Survey, at that time part of the Agriculture Department, it was not transferred to the Interior Department until 1940. But because it was part of the Department of Agriculture, and because it was developed in concert with the adjoining Beltsville Agricultural Research Center, it is not surprising that Patuxent's connection with agriculture was important from the beginning.

So, many of the underpinnings and much of the initial focus of the Patuxent Center were on agriculture.

One early program on the refuge was a formal farm wild..., Farm Wildlife Program. I don't remember what its formal name was, but it was widely known as the Farm Wildlife Program. Two farms were operated more or less side by side. One of them was designed by the Soil Conservation Service to incorporate all the new thinking about how agriculture should be conducted, and to include all kinds of ways that had been suggested to enhance wildlife. The other farm, comparable in most ways, was to be operated by the old "tried and true" and wasteful methods.

By the way, those of you who have worked at Patuxent probably remember that one of the legacies of the Farm Wildlife Program is all the Multiflora Rose. It was planted as hedgerows, and which has escaped and is now an unwanted component of many habitats at Patuxent.

Anyhow, we had the two farms. And the job of the scientists was to document the benefits to wildlife growing an enlightened farm.

According to Dr. Stickel, the Farm Wildlife Program was a colossal failure. No one was ever able to document increases in wildlife populations that were expected. Nor were the anticipated benefits in terms of wildlife, nor did they ever materialize, even anecdotally.

The program was regarded as a 'boondoggle' and was an easy target for cost cutting. And in a cost cutting mood, the program was terminated, reductions in forest took place, and nearly all of the staff lost their jobs.

The few who remained fortunately were insightful enough to recognize that the new

synthetic pesticides coming online were a cause for concern, and a possible ticket to the future. And they led the development of what ultimately would become one of Patuxent's essential programs.

Now the word hadn't been coined at that time, but the introduction of synthetic pesticides after the Second World War was one of the harbingers of what would later be known as the "Green Revolution."

These pesticides vastly increased agriculture productivity, with a result that there was a decrease in the acres of cultivation, and ultimately there would be a ban limit of farmland that would be available to revert or to be restored into wild lands. Also involved was a massive migration of population from the countryside into the urban areas.

So these at the time were all considered good things, and many of them certainly were.

One thing that only the few people recognized, however, was the possible negative effect on wildlife. If nothing else, a reduction of insect populations might decrease the food base. But of course there are other possible side effects also.

Anyhow, only a few people recognized these, and fortunately some of them were at Patuxent. They obtained funds from the USDA, and Patuxent became involved in a suite of studies across a wide variety of venues into aspects of the new pesticides.

So Patuxent was involved in..., Think about the importance of this for a moment; why it was so important to Patuxent rather than say, for example, State College or somewhere else that might have been the pioneers in this area. At Patuxent there was already the connection based on its founding with Agriculture, and of course the ill-fated Farm Wildlife Program.

There were lands available for outdoor experiments, large-scale outdoor experiments in realistic surroundings. There were, or in the future would be, facilities for propagation and maintenance of captive wildlife, making it possible to perform controlled statistically valid experiments there with captive wildlife.

There was a chemistry laboratory originally established for nutrition studies, wildlife nutrition studies, that was available also to expand into the field of chemical toxicology.

There were wildlife disease specialists who could help to diagnose, work on the pathology of wildlife infected with the bi-contaminants. There were animal control specialists who were doing their own thing too to control wildlife, much of it involving

toxicology.

Very important too was the connection with wildlife population studies. Scientists at Patuxent were pioneering methods of estimating and censusing wildlife populations, including birds and small mammals among others. And these would be important in the future to help determine the effects of applications of pesticides out in the field.

What specialized expertise was not already available at Patuxent could presumably be obtained from the Beltsville Agricultural Research Center.

Okay, a word about DDT; it was patented in 1940, and became commercially available in 1942. It was considered a great boon to mankind. And in 1948, Paul Muller, a Swiss scientist who had discovered its insecticidal properties, was awarded the Nobel Prize in physiology and medicine.

Patuxent began its studies in 1943, the year after its commercial introduction. And in 1946, published its first studies on DDT, just as the Second World War was ending. These original studies burst on the scene together in Volume 10 of the *Journal of Wildlife Management*, and I'm going to read you the titles and authors of these studies.

On page 192, we had *Effects of DDT spray on eggs and nestingling of birds* by R.T. Mitchell.

On page 195, *The effects of DDT on birds at the Patuxent Research Refuge* by R.E. Stewart, J.B. Cope, C.S. Robbins, and J.W. Brainerd.

On page 202, *The effects on forest birds of DDT use for gypsy moth control in Pennsylvania* by N. Hotchkiss and R.H. Pough.

On page 208, *Experiments on toxicity of DDT to wildlife* by D.R. Coburn and R. Treichler.

On page 216, *Field studies of a Peromyscus population in an area treated with DDT* by L.F. Stickel.

Now some of the authors of these original studies were wildlife biologists and ornithologists. But it's worth noting that Hotchkiss was a wetland ecologist, Coburn was a disease specialist, and Stickel was a population ecologist, working on small mammals and reptiles.

So a lot of existing expertise was put to work on these first studies.

Despite the apparent thoroughness of these very early studies, they failed to elucidate the true hazards to wildlife (unclear: 1:11:35) by DDT.

For the most part, they demonstrated that DDT was relatively safe when used carefully and when dosages were realistic and were not excessive.

It would be another 20 years in development of entirely new research methodologies before the true hazards of DDT and its mechanisms were understood.

And I would like to remark that the series of studies, tremendous series of studies that led to these conclusions were remarkable. And probably would be more worthy of a Nobel Prize than the discovery of DDT's properties by Muller.

So science continued through the 1950's. And many of these pesticides had much more lethal effects than DDT, so there were a lot of dead animals to more or less emphasize the importance of keeping the work going.

In 1958, the Magnuson-Metcalf Bill was passed and became law. And at that time studies at Patuxent of pesticides could be funded by the Department of the Interior, and funds were actually allocated for this. What's of interest is that most of the work up to that time was done by funds, was supported by funds from USDA, and that this outside funding was really important in keeping Patuxent's core programs afloat. They were going through hard times, and without the pesticide funds a lot of that work could not have continued.

Lists of publications in this period reveal that almost all Patuxent scientists at one time or another were involved in pesticide studies.

The Magnuson-Metcalf Act changed this, and in 1962, after publication by Rachel Carson of *Silent Spring*, the funding was much increased. And the Contaminant Program, Pesticide Program as it was then known, was able to get permanent staff.

As I noted in my book, *Patuxent Policy and the Public Interest*, this is the book, www.lighthallbooks.com,as I noted in the book wildlife toxicology became a new career for me and for many others. It is now recognized as a scientific field practiced by investigators all over the world.

(To list the first to be cited: 1:14:29) as part of Patuxent's 75th Anniversary, it should be noted that Patuxent was the birthplace of this important scientific discipline.

Thank you. Thanks for inviting me, and thanks for carrying on in the legacy of Patuxent.

David Trauger:

We're scheduled to go on a break, but are there any questions for Russ?
[Audience laughs in response]

We didn't get a chance for anyone to make a comment or ask a question of Chan. Does anyone have anything that you would like to raise? Yes?

Audience:
I wanted to ask Chan, is Wisdom still alive as far as you know?

Dr. Chandler Robbins:
As far as I know, yes.

Audience:
So, over 60 now, maybe?

Dr. Chandler Robbins:
Oh yes.

Audience:
Not, not quite your age yet?

Dr. Chandler Robbins?
No.

David Trauger:
Any other questions or comments? If not, let's take a 15-minute break, and please be prompt in coming back so we can continue this morning's program. So thank you.

Patuxent Science Symposium
Thursday
Session Moderator: David Trauger

David Trauger introductory: Dr. Michael Erwin

David Trauger:
And our next speaker is Dr. Michael Erwin, who was a Patuxent scientist since 1978, and has continued working with many migratory bird and Chesapeake Bay research projects.

His talk is going to trace the many changes and approaches in bird management, monitoring, and research that have founded at Patuxent in 1936, through the current time.

And Mike, it's all yours.

Dr. Michael Erwin:
Well, I've got now 13 minutes to cover 75 years of fun and adventure at Patuxent! I've only been here since '78, as Dave said, so I've had to crib some notes from Matt Perry and others.

I'm going to be showing some pictures of people that may or not be aware that I'm going to show them. I'm going to mention some names of people, and those of you who I don't mention but should have mentioned, you should feel lucky; alright, but it may come out in the manuscript.

Okay, as you've already learned, a lot of our early history in the late 30's and early 40's were all about not conserving or preserving birds. but how do we get rid of the damn things that are eating our crops? So a lot of the early damage control and focus as USDA entity was focused on controlling birds and not saving birds. So starlings and red-wings were definitely birds to get rid of, and cormorants; just some early history and name of cormorants liking salmon smolts, what a surprise. So, some things don't change over time.

So, our Patuxent flying Cajun! [Oops, what happened? It's got a mind of its own.] Our flying Cajun was a Patuxent employee, Johnny Lynch, down in Louisiana for his whole career, I believe, involved in waterfowl surveys along the Gulf Coast.

And then we had Walt Crissey, who, of course, has a very interesting book that he wrote, *A Life Like No Other*, which I have to admit I haven't read. But John Sauer and I were talking this morning, he says it's eminently a readable book and highly recommended,

and I'm sure there are several copies floating around.

So, early on when people like Dave Anderson and Chuck Henny and Chan were here, there was something called the Migratory Bird Population Station. And this was where a lot of the early waterfowl surveys began in the '40's and '50's, a lot of fun in the summer up in Canada banding birds.

And at the same time, for people like Fran Uhler and so forth were involved back here in the early impoundment research times, looking at what, what waterfowl plants are most productive and which seeds seemed to be most viable in these types of waters. And there was even some early discussions of herbicides to control things like watermilfoil. [Okay, why isn't it advancing? Let's see.]

Okay, so the '50's.

Moving onto the '60's; we've heard about the DDT area from Russ. And, of course, Rachel Carson deserves a great deal of credit for her book *Silent Spring* that awakened the public. Lucille Stickel took great advantage of the early pesticide era and became a prominent center director and scientist, leading many studies here as many of you know.

And during this period, I think as Chan mentioned, most of the emphasis was on game bird species. There was very little non-game. Chan was the non-game section for many, many years. And there he is wrestling with a Laysan Albatross, which may or may not be Wisdom. We're not sure, but if it is Wisdom she may be over 60 by now.

Then in the '70's, with the NIPA and the Endangered Species Act; I call it the 'Earth Day Awakening' period in the United States. As many of you know, we became very earth-conscious at that point. 1970 marked the first Earth Day, if many of you remember.

And in '73, we had a separation of the Patuxent Wildlife Research Center from something called, what we used to just use shorthand, MBHRL. And this was, in many ways, was somewhat unfortunate, wresting apart the managers from the researchers. And then there's a third entity, what I call the 'Three's Company Crowd' out here, we had a collocation of MBMO personnel.

So Jerry Serie, "Mr. Flyaway," is pictured there. And our friend John Tautin, who I think you'll hear from later, we called him "Mr. Woodcock" back in those days, but now he's changed to purple shirt, so he's "Mr. Purple Martin."

We brought in a franchise player up in the upper right there named Jim Nichols; we got

him as a free agent out of Michigan.

And the non-game section expanded from Chan, to include seven fulltime researchers. And many of you remember Marshall Howell, who retired a few years ago. And we brought in Mark Fuller as a raptor man, and Deanna Dawson, and myself, of course.

And I would be remiss not to mention one of our stars of the past, who went on to an illustrious career west of the Mississippi, Dave Anderson. Who I actually went to Bradford School with; I didn't know he was a superstar; he kept his candle under a bushel. But he's one who I think we can give the most credit to for, for arriving where we are today in model evaluation and model testing. And really changing the way population ecology is done, both in wildlife and the broader field, bringing in things like decision theory and dynamic optimization.

As I mentioned, game bird research was still prominent in the '70's. And we have some of our recent retirees; Jerry Longcore pictured there, and Mike Haramis and Matt Perry were heavily involved in canvasback work and the bay, wintering waterfowl in the bay. And that program is being carried forward by Alicia Berlin.

And we did some..., we had people involved in mourning dove work and woodcock research, as well as having the collocated MBMO folks looking at the management aspects.

The non-game section I mentioned included work on all of these different groups, and of course Chan was the godfather of our group. Somehow I ended up supervising him, which always made me feel somewhat humble.

And then in the 1980's, we got rid of the, not... There are probably people in the group, in the audience, that don't know what that is, but that's a typewriter in the middle on the left! We used to use those; we were called "Remington Raiders" in those days, and then got upgraded to PCs in about the mid-80s. We were all told that, "You will take these computers and you will make good use of them." So we did.

And then the inimitable characters, such as "B.K." Ken Williams arrived as well as the inimitable Mike Conroy and those... Mike has recently retired from the Georgia Coop Unit. And Ken is one that went from research to management and then went back to research in the Coop Unit.

But this is an era when modeling really took off, and we really became quite serious about quantitative applications to wildlife.

Thanks to Bob Bloom, who unfortunately couldn't be here, he's out in the Midwest hunting something, he provided me with a long list of projects that really were joint efforts between MBMO and Patuxent. So, there was, in spite of this separation that I mentioned of the management and the research, there was lots of bridging that went on. And these are just some of the examples of those projects that involved the people crossing over those boundaries regularly. And the management plan, those things are still under revision from time to time. And this is also an opportunity where researchers and managers get together.

And the first large-scale application of adaptive management was, thanks to people like Ken Williams and Jim Nichols, was the adaptive harvest management.

Then the 1990's I call the "Identity Crisis." So we were in a maelstrom of activity, we didn't know whether we were Fish and Wildlife Service, NBS, USGS; any of those alphabet soup.

But, we went through a lot of turmoil in the early 90's, and we were only NBS for about what three years I believe? 1993 to '96. And then we became the Biological Resources Division of the USGS, as those of you remember. So, I guess the folks in USGS thought of this as Manifest Destiny. The USGS paradigm now; we don't think about migratory bird programs anymore, but we think about ecosystems and really broad scale things, environmental health and climate change.

So Patuxent's budget, of course, is nothing, nothing new to most of you. We've seen a lot of feasting upon our budget. But, nonetheless, in spite of that we're still doing a great deal with the relatively limited budget. There's a lot of fight left in us.

These are some of the examples of a real broad kaleidoscope of bird-related activities going on at Patuxent with the expansion of the occupancy modeling hierarchical models built by John Sauer, Mike Runge. Of course, capturing recapture models where Jim Nichols made his fame.

Now we're getting into the era of structured decision making, and someday I'll understand all of what that means. But there's, there's long papers and now books being written about it, in taking a large-scale approach to natural resource management.

And disease ecology; Diann Prosser's work in China and Mongolia, working with a number of people; that represents quite an expansion of our activities.

Working on coastal land management, that's always been our bread and butter. And then habitat restoration, this is an area I've gotten into about the last ten years in my career; island restoration and working with refuges.

And then energy impact assessment. Of course this is something that I think we're going to see a lot more in the future, with wind turbines and so forth.

The monitoring means many things to many people. And this is just some of the examples of the monitoring that Patuxent's been involved with over the years. The population changes, whether it's a Roseate Tern; Jeff Spendelow's long-term efforts on that species now spanning some 30 years. My work at Poplar Island is in about its 12th years. And then of course Chan made the term, helped make the term "forest fragmentation" sort of a very popular word that many books have been written about now. Diann's work in Mongolia on the Whooper Swan shows some of the avian influenza research going on.

And in the future, okay, what are we looking at? Well, as I mentioned, coastal climate change is going to be a huge issue, and a lot of us do work in coastal habitats. But also climate change in the interior, what's going on with respective bird, bird range changes. And again, John Sauer and others have been looking at that over the years.

Energy developments; not only wind turbines, whether they be in mountains or along the seashore, but we may get back into the era of looking at mining effects, whether it's coal mining, whether it's Marcellus Shale deposits and so forth.

It seems that none of these things are off the table.

Projects need to be continued at multiple scales. And of course we've long been doing this. At the lower left hand side we've got some short-term funding sources; the SSP projects and the quick response projects that Refuges and Parks asks us to do. And then at a slightly larger scale in time and space we have adapted management, some restoration projects that may be three to five years in relation.

And then we get up into the larger scale regional monitoring programs and working with joint ventures.

And then at the upper right, the most largest scale, I guess you could say, is the systematic studies. They're what DNA has done to looking at review of birds and molecular phylogeny approaches that Terry Chesser and the museum folks are doing; very important work.

And I mentioned structure decision making already, is a broad overarching approach to natural resources.

And then, of course, our long-term field studies are something that should continue. And there seem to be, at least within parts of USGS, it seems to be more and more challenging to get the funds to continue these long-term studies.

So, in the old days there used to be a fair amount of conflict and fighting and stovepipe thinking, as many of you remember, about, "Well, let's see, is that management money? Is that monitoring money? Is that research money?"

Not a good way to approach natural resources. And when I first came to Patuxent, there was a bit of a competition and a rivalry among the "game" and "non-game." And I remember, (Van's: 14:54) not here so I can say this, (Van Martin) once made a quote that after we staff up and add all these people in the non-game program, after about five years we'll have all the answers so we can go back to game. Some of you may remember that.

So, with the merger of stovepipe thinking and the wedding of monitoring management and research, I think is one that we all embrace at this point, or most of us do.

And a nice example is Mike Runge and Andy Wilson, who is a post-doc here, are starting, have started up an interesting expanse of program involving multiple refuges called the Integrated Water Bird Management and Monitoring Program, close to my own heart.

So Nick..., Nichols this is payback time because Jim is in Africa having a great time on a tour, so we're going to roast him a little bit. So, this is one of his fun trips to America Samoa, and I think he had one too many Guinness.

So now anyway to end, I think we can all be proud of our past, present, and no doubt our future. Even though we struggle with resources, I think we can be proud of doing a lot with a little. And in terms of acknowledgement, I would like all of us to recall those who remember Stan Anderson; he's the one who brought me here and many others. And also thanks to these folks for providing me with, with good images.

So thanks very much.

David Trauger:
Good job. Right on time, and we have a minute or two here for questions or comments. You can bring up the lights, whoever is doing that.

Dr. Michael Erwin:
By the way, Jim did provide me with that slide; he was hoping I might use it.

David Trauger:
Any questions for Mike?

Well, one thing, Mike, that you brought out that several of us commented earlier, about the fact that Patuxent was really, you know, spawned, or was the genesis for many of the programs of other wildlife research centers. But you made a real important observation that I want to sort of underscore, and that is that many of the leaders in the cooperative wildlife research units had their early days here at Patuxent too. And so we had a role at Patuxent in developing those people and watching them and their careers. So I think that's a real important observation as well.

Patuxent Science Symposium
Thursday
Session Moderator: David Trauger

David Trauger introductory: Dr. John Sauer

David Trauger:
Okay, moving right along, our next speaker is Dr. John Sauer.

John has worked at Patuxent since 1986, and has focused his research on development and analyses of monitoring programs.

He collaborated with many at Patuxent in analyzing the data from the Breeding Bird Survey, and has had many derivative studies that have come from that.

And this morning John's going to share some of the results of that program.

Dr. John Sauer:
Thank you. Three initial comments, I guess.

The first one is in response to the many inquiries; I have not retired yet.

The second one is that there are a couple of things from the earlier talks; one is that if you, if you look at Mike's talk, you realize that we're actually talking about, as Jim Kushlan termed it, 'A greater Patuxent,' the concatenating group of organizations. And the things I'm going to talk about and the things I've worked on reflect that pretty well. So that's sort of playing in the background as well.

And yeah, and of course I can't remember the third one. Oh yeah, the third one is we're all talking about basically the same history and there's a lot of overlap, but we all view it from slightly different perspectives. So, you'll see some of the same things we've been talking about, but I'll twist them to my own perverse desires as we proceed.

Okay, so I was tasked to talk with research to support the North American Breeding Bird Survey, and I thought I should explain what that is to the half a person in the room that may not know. And the North American Breeding Bird Survey is basically a continent-wide survey of birds. It was started back formally in 1966. It's a roadside survey that's composed of these 24-1/2 mile survey routes that are surveyed one time each year by a volunteer, and it's composed of three..., of 50 3-minute stops. So you get in your car, you count for three minutes, you get out of your car, you count for three minutes, you get back into your car, you roar up to the next site. You argue with your observer about where it is, you get out and count for the next three minutes, you get in, you do that for 50 stops and you end up exhausted at about 9:30 in the morning.

As you can see, the volunteer observers adopt a wide variety of fashions as they count, and they often count along roads.

Okay, it's an extensive survey. This is a GIS map, it doesn't include any of the recently added Mexican routes, but it shows the Continental U.S. and southern Canada routes. And there's a lot of them, over 5,000 of these survey routes. And if you go down in scale they look more like spaghetti thrown against the map. And if you get very local, you can start thinking about the route path and buffering it to show sort of an effective area of your survey. And you can start thinking about overlaying it on some of our remotely sensed habitat maps produced by other people in the USGS.

And that sort of makes you realize what a, by looking at the geographic scale you realize what a unique resource this survey is. It's got enormous coverage over space and time,

and it really forms the only source of information for a whole lot of studies. And certainly with climate change being important, this is often the only game in town. And if, you know, with trying to use bird information to inform management, this is where people go naturally for a lot of the information on surveys.

And as you can see, this isn't the first time you've seen the picture of Chan grabbing that albatross!

Okay, all you have to do is look in the literature; I think our website has 1,500 citations, and big science uses the BBS as well as management. And I was very restrained, I only put two of the four that I'm directly involved with, so...

And, however, it's a little alarming to note that throughout the history of the BBS, it's been somewhat controversial as a source of bird survey data, just in terms of its methods and its analyses.

So, the role of research at Patuxent since well before the BBS was started was in establishing and maintaining credibility of the survey, ensuring that the results were readily available, and integrating the survey better into modeling and decision making by developing analyses that contribute to that.

Okay, it's really dangerous to talk about history when the people who've made it are actually in the room. So, with that caveat let me talk a little bit about it.

Okay, this place has been really important on bird population analyses for a long time. And the reason is because having the Fish and Wildlife Service here and the game bird regulatory stuff, they've always had a very comprehensive range-wide view of populations. And they've always worked to develop surveys that cover the area, because the forum of management is a very strong crucible for melting things that aren't very (political: 24:30) melting points. So, that's a weird analogy, but anyway.

So the migratory bird population station and other groups; I spent a lot of time thinking about surveys, both big scale for waterfowl, and also for these widely distributed species like mourning doves and woodcock, never thinking about roadside surveys. And Jan mentioned that, and he was instrumental in it.

And another thing that people here thought about a lot is the continental scale focus and getting other people to collect the data. These are two pictures taken from the obituaries of these guys and the hawk, and it strikes me as odd that their signatures are on those, but anyway.

I think Sam tomorrow is going to talk about Wells Cook and his getting people to contribute to his phenology program. And Chan was..., Chan was involved with that in his early years. And, of course, we've had these connections with Audubon that Chan mentioned, and Chapman started the Christmas bird count.

So there's a history of incorporating citizens into our work. And Chan flashed a slide of a flight of operation recovery, which was a big cooperative bird banding project. So this sort of notion of getting people to do surveys is well in the mind of people here.

And, of course, from the 1940's on, there was all this pesticide work, and Rachel Carson, who was editing the Fish and Wildlife publication series--these folks were writing this stuff up--incorporated that into her view of the world. And when she came out with *Silent Spring*, she talked a lot about bird population problems, and she made a bunch of statements like those two on the bottom there, "Another striking loss is the phoebe..." So she used that information, but she really didn't know a lot about it, she just had some anecdotes. She didn't have a lot of good information about range-wide stuff going on with birds.

Okay, Patuxent capitalized on that lack of, or realized that lack of information. And scientists took that in several dimensions, basically all the major dimensions including, obviously all the pesticide work was focused on getting that cause and effect stuff. But also, Chan took it as the opportunity to initiate the breeding bird survey. [And I have no idea why it isn't showing that link.] But anyway, he used that as a rationale. And this was definitely the right time and place to do that because we had all that population stuff, we had the history of citizen, science, and Chan with all of his connections to the bird community, knew a lot of people.

So they did it. And they did some research to evaluate protocols, specifically for the BBS that built on Chan's work with the dove surveys and woodcock surveys earlier. And notice that he got his revenge and got to do his correct starting time for the surveys with the BBS.

Okay, so they started in '65, and got it going by '68. And one thing that distinguishes it was that Chan got a lot of people interested in it who could do things like, for example, in Canada Tony Erskine took off time from his critical work on banded measuring Mergansers to initiating the Canada breeding bird survey. And he came down here a few years ago and gave a talk and we have it on our website. It's kind of an interesting discussion.

But in any case, once they got the survey going, all of a sudden all of this information started pouring in, and they started realizing that it's a lot of work to keep these observers going and get them to enter their data. And it also turned out to be a much more complicated problem then they first thought, about how to come up with the results from the survey, and there was also a lingering discussion about the methods and how good they were. And there' are a lot of people in this room who were personally involved with those discussions, so we need to talk with some of them.

I'll just mention that right now there's a bunch of people who work on it on the U.S. side in the group photo, and some of the Canadian coordinators on the right. There's another slide of Mexican coordinators who I couldn't into a slide here.

But anyway, this talk is a good opportunity for me to air one of my personal gripes, and that is the notion that surveys aren't research. It seemed to work pretty well for me as far as a research career, working on surveys. And one reason is because it's a very complex dynamic; writing the survey, managing the data, analyzing it, and trying to get feedback to improve the survey.

Basically in that matrix of activities is a whole lot of research. And that's what I want to talk about now. And, of course, here, you know, with the managing, increasing managing use of it, there's pressure to get it right. You know, we have an obligation to do things right and provide some leadership. And, in fact, maybe even do a little science with it at the end.

So, this is actually...But that was actually, by the way, an introduction.

Now here's what I want to talk about; okay, there's a whole bunch of things that involve, that research interacts with the breeding bird survey. The first one is that, that, and this is a complicated survey that encounters maybe, I don't know, 600 different bird species. And things are happening with those bird species, and there's just a lot of pure natural history ornithology that has to go into it.

There's also a big statistical piece analysis. There is the issue of, 'Is it good enough?' And, 'Should we be improving it?' So there are field studies. And then there's finally all these people who take the survey and run with it and write papers in nature and science.

Okay, so let me talk a little bit about, in a purely unprejudiced way, the analysis. Okay, one thing that characterizes the work here is that we care about it. We've devoted a, we being the people in charge, have hired a lot of people who are specifically focused on the

statistics of bird populations. And that's unique. And it really puts this layer of research between some of the data collection and the users of the data. And I have people a lot smarter than me, I'm sort of an implementer of analysis, but having people like Andy Royle, Bill Link as the real statistical authorities really makes a difference. And having these strata of intellects involved with it, I think, has made it pretty successful.

Okay, and one reason is there's a lot of easy analysis you can do with the BBS. And they show a pattern of more reflect when people did stuff then what's actually going on with the birds. And through the 45-year history of this survey, we see that we've been pretty good at adopting new methods as the technology becomes available.

So Paul Geissler, in the 70's, did a great job, but he had to cobble it together with the computational resources he had at the time. We, as things have, as events progressed, we were able to come up with much more sophisticated models that could really do what he wanted to do, but couldn't do because the computational resources were limited at the time. So it's advanced.

And I should say they said, "For goodness sake, don't show any numbers." So, I thought I'd throw this in just to point out that it really is a, it really is a deep statistical discussion. And you do have to start thinking about statistical distributions and a whole bunch of stuff that we like to close our eyes and hum about when people talk about it.

Anyway, but we've, we recently have implemented a new analysis method that's a hierarchical model. And it lets us get to all these things that, I think, provide a little bit of an improvement to an historical approach. Just for example, we have population trajectories with credible intervals and we can map, we can list population changes by state and bird conservation region. And put credible intervals on them and show sort of the true ranking of the species, of the regions for most declining areas to most positive trends for the species.

So we can implement a lot of nifty stuff and we can do analysis for species groups. So we can get a composite analysis for grassland birds, which is probably the most declining group of birds in North America.

Okay. And we also can put effort, due to the brilliance of people like Jim Hines we can put this stuff up on the internet and have it available to everybody, and have them do interactive programs on there. And there's the...

So that's sort of the operational stuff. But there's also a lot of statistical research going on through postdocs and other people associated with the project.

Right now there's a project going on with developing improved mapping and spatial models for the BBS. And of course those sorts of models and other things we're doing develop means of better tying survey results with on-the-ground changes in management. So that's an important component of what we like to think about where the survey is going.

There's a lot of other methods development going on. There's a postdoc here, Richard Chandler, working on statistical approaches that estimate detectability. And hopefully it will provide some productive results.

And, of course, there's an ongoing attempt to figure out ways of doing better analyses. And a lot of these, a lot of these studies basically use the statistical models that we use to analyze the BBS data now. And they..., we used (unclear: 33:03) to connect the, the analysis to scientific questions. And one example of this is phenology of birds.

Okay, so birds, you know, during their..., sometimes in the season they're more visible than other times. And the survey is timed to coincide to when birds are most active. And this just shows sort of the regional variation and the different windows of time that you're allowed to do the survey.

But it turns out the world is getting a little warmer. And you can see that these are temperature increases. So there are increases all over the map over the time of the BBS in temperature and changes in precipitation. And these might be influencing that question of, 'Are we getting the correct window for surveying birds?' And it's also interesting to know why birds are changing activity.

So we included this information of year/day. Basically, we were interested in how the time you did the survey influenced the counts on the survey. And we found significant effects. So we found, fluffing over most of the numbers here, but we basically found that 22% of the species tended to be more visible later in the season and 38% tended to be less visible later in the season. So thinking about that, we also looked at whether mean data counting changed during the season, and we found that it did, but not that much.

So we're trying to keep an eye on this notion of, 'Is the survey still getting in the appropriate window of time in relation to the bird stuff using our models?' But we're also interested in the broader ecological question of whether birds are changing in how they time their reproduction.

Okay, a couple more quick comments; one is that taxonomists are a pain in the neck

because they're always changing the taxonomy of birds. And that means suddenly your database has data for one species that's now two species. And this is actually a subtle question about how you handle that in terms of management and analysis. And I won't talk much about it except to say that we often group species for analyses when it's difficult to tell the difference. But the BBS coordinators think a lot about it.

Okay, I only have a minute or two left, but let me make a few more comments; one is that there have been a lot of field studies after following up on Chan's original work to see if the BBS is doing well with basic underlying assumptions. Okay, and the BBS coordinators and the Patuxent staff have really been enthusiastic participants of these. And they have made a lot of this happen, both by organizing research in a context to the survey and taking care of the data. Okay. And there are a few, a few major projects going on now such as looking at special surveys in Louisiana following the oil spill. So, we can be very active in making the survey better through the efforts of the coordinators.

Okay, just one final discussion point, and that is the BBS. There are two major concerns about the BBS that have been cited from the beginning of the survey. One is that roadside counts may not reflect off-road habitats. And the other one is that point counts are a really crappy way of collecting data on birds because everything makes them different, and you don't know if you're looking at the counting process or birds.

Okay, in addressing this first one, there are a lot of studies going on that use USGS-based, remotely-sensed and classified land-use data, to see if the area next to roads are different from the areas off side of roads. And one thing Jane Fallon has been doing over the past few years is randomly flipping BBS routes down on the landscape and analyzing their landscape characteristics to see if the road-based ones are different from randomly placed ones. And another... so that's, that's one big area of research.

Another area of research is thinking about whether you should be doing different counting methods and counting off roads, and we did a study of this a few years ago where we did on-road versus off-road routes. Basically, we selected a few off-road routes and compared them to roadside survey routes. So those circled things are the off-road selected areas and we counted within that. And we found that birds were detected at different rates on- versus off-roads, and abundances differed on- versus off-roads. And that's not particularly surprising. And, and we also did a habitat analysis to show there were differences in habitats.

Okay, two final comments. I'm out of time, but the first one is that most of the topics researched are relevant to the analysis of the data. So there's a feedback between fieldwork and incorporating new factors into the analysis to better make the data better.

And the final thing I wanted to say is just to reiterate that the BBS is the only game in town for a lot of the really critical questions of bird populations nowadays. So, it's important and it's worth putting a lot of effort into, and we do.

Thanks.

David Trauger:
Thanks, John.

Patuxent Science Symposium
Thursday
Session Moderator: David Trauger

David Trauger introductory: John Tautin

David Trauger:
Okay, we're right on time and moving right along. Our next speaker is John Tautin.

John was the Chief of the Bird Banding Laboratory from 1989 to 2002. He'd been a biologist at Patuxent earlier, between 1974 and 1985. He is a co-editor of a book, *Bird Banding in North America: The First Hundred years*.

And his talk today is going to talk about the history of the BBO, and its contribution to research and management. John.

John Tautin:
Thank you, Dave.

Well, good morning, it's a pleasure to be back at Patuxent. The bird banding program in North America has a very lengthy and rich history. And I'd like to dedicate this talk to, to some of those people who have been the keepers of this history, particularly Matt Perry, who has kept a history of Patuxent, which has been the home of the banding program for so long.

Also, I want to recognize Chan, who has given us the oral history. It's important to the background of banding. And I also want to recognize Lynda for managing a superb library. There is no better source in the world for the history of the migratory bird program than this library. [Applause]

To really get a feel for the history of the banding program at Patuxent, we need to go back to its beginning. And its beginning began in 1902, right here in the D.C. area. Paul Bartsch at the Smithsonian scientifically banded Black-crowned Night-Herons. And I say scientifically because he indeed did it right, his bands had a return address plus a serial number. He actually got some returns that year of his Black-crowned Night-Herons. And he actually published his results. So as far as I know, this was, this was the first publication of banding results in North America.

Well, Bartsch was a very interesting person both personally and professionally. I could do a whole talk on him. But anyway, Bartsch saw the value of this, this technique. And just read that first sentence there, "Still many unsolved problems about bird life." And then he went on to list them as possibilities for a study. Bartsch didn't band birds after that, but other people picked up the idea.

And by the 19-'teens, bird-banding was off to a good start in Canada and the U.S. The American Bird Banding Association was managing it. Also in the 19-'teens, Alex Wetmore, with the Bureau of Biological Survey, got a job to go out to Utah to study the notorious duck sickness, which was later identified to be botulism. Well, he banded a lot of birds, waterfowl there, and he got some interesting recoveries, and came back to Washington promoting this technique as being valuable to waterfowl management.

Also in the late 'teens we had a couple of events; one being the Migratory Bird Treaty between Canada and the U.S. in 1916, followed by the Migratory Bird Treaty Act of 1918, that established federal preeminence in migratory birds. And then with the experience that Wetmore had and a general feeling in the banding community then that this was important stuff, it needed a home that was secure and could have the resource to promote this program. And so in 1920, the Bureau of Biological Survey took over the administration of bird banding.

And then Wetmore was instrumental in, well he became the Secretary of the Smithsonian later, but one of his more astute administrative decisions in his career was recommending Frederick Lincoln to take over and establish the banding program.

And Lincoln was a remarkable individual. Think about it, in the 1920's to start a banding program, he had to develop a numbering scheme, recordkeeping schemes. He had to procure bands, he had to educate and recruit banders, he had to analyze results, publish results, encourage people to get out and do more of this.

And one of the great things he did was he chronicled the history of the program with the 46 years, he started 46 years of bird banding notes, and it's a wonderful history.

Lincoln was still in charge of the banding program in the '30s. Like everything else in America, the Depression affected the bird banding program, resources were so short. But they did manage to make some advances here. And I always thought that this was a very interesting one that Margaret Nice was credited along with Wilbur Butts, of using colored bands for the first time to study birds. We all know her, Margaret and her studies of songbirds. I don't think anybody ever heard of Wilbur though.

Lincoln, despite all the challenges, Lincoln was undaunted in the '30s. And he really was in his prime, and he developed the famous Lincoln index, he wrote a book on American waterfowls, he developed the flyways concept, which is still in effect today. He wrote other bird books. He just was a remarkable individual. And when you think about it, think about this amount of accomplishment from a guy who never got a college degree.

External events in the '30s also influenced the banding program. The Division of Migratory Waterfowl and four flyway biologists were appointed, Ducks Unlimited was incorporated, a wild duck census was started, and a Migratory Bird Hunting Stamp Act was passed, which brought in monies for duck habitat.

The stage was being set in the '30s for waterfowl management to really dominate banding for decades to come.

And commensurate with that was the rise with what I call the 'Almighty Mallard,' because we like to think as humans that we influence programs, establish programs. But it was a need for data on the Mallard that really drove a lot of the development of the banding program.

War too slowed the banding program, but here's where Patuxent comes into play. Fish and Wildlife Service moved its headquarters to Chicago in '42, during the war. But the banding office, which was located at Washington, came to Patuxent Research Center, where it stayed.

And this was a really fortuitous event for us all because there in the coming decades would develop this remarkable synergy between the BBO, the banding office, the research component here, and the management component was out here. They mutually supported and benefited each other.

I like to think that this was a major event in the development of the banding office at Patuxent. Chan started there, we know his history and we know that he's been heavily involved with banding virtually his whole career.

Lincoln was still officially in charge of the banding office up through 1947, although he had a lot of other responsibilities. He finally retired, and this is a photo of him in '48, at a meeting of the (Bear: 47:58) Ornithological Club. A couple other interesting people in here; Paul Bartsch is there, the first bander, here's Alex Wetmore, and here's John Aldrich, we've heard his name a couple times today. Aldrich was important to the banding program here at Patuxent in that between Lincoln and Seth Low, Aldrich sort of filled in administering the banding program.

In '48, Seth Low became the second official banding office chief; I don't know if they called them chiefs back then but basically that's what he was. There was a lot happening: Post-war changes; they were advancing waterfowl management; the GI Bill was sending people to wildlife colleges and schools; surplus aircraft available; sporting arms and ammunition available again; a lot of people resumed duck hunting; new federal funding, Pickman and Robinson, for example; flyway council was formed; population of harvest surveys started right here at Patuxent; and an important pre-hunting season duck banding program started.

Well, early after its..., soon after its arrival at Patuxent, you started to see this synergy developing, and the Service started a series of scientific, special scientific reports. And number one dealt with an analysis of migration of North American waterfowl.

And we just pull up one of the chapters in there, *Migration Pattern of the Mallard* was written by Arthur Hawkins. And Hawkins actually came to Patuxent to work in the banding office and compile data and do his research there. And every time I ever visited Art Hawkins, he always remembered back to coming to Patuxent and the help that the banding office gave him with this project.

Joe Hickey, University of Wisconsin, got his start here at Patuxent too, doing research in the banding lab files. He did survival studies of banded birds; SR-15. And from the table of contents it's interesting to note, he did some of the first analyses of non-game bird survival using life tables at that time. And look here, prominent in his work was the implications and mortality data with special reference to the Mallard. Here we have the Mallard again driving things.

Al Duvall was the head of the banding office here in 1954. He dealt with a situation where '50s and '60s, waterfowl management was really dominating. There were some consequences; permit policies favored the agencies, waterfowl banding was generally restricted to agencies. They even somewhat had a lock on the data. The banding records were modified to accommodate waterfowl interests. And curiously, some of the features

in the records that remain today, like this hunting season survive code that we don't really need, the almighty Mallard became the number one all time banded bird, still is. And as it's been pointed out by previous speakers, non-game bird banding, largely ignored at this time.

Well, both Seth Low and Allen Duvall, I didn't hear their flanking of Bob Stewart, who was a biologist here during those year. Neither Low nor Duvall published a lot, so we don't know, we don't have a really good record of what was going on, but we could presume that they and their staff were very supportive of research efforts. Fire drove them to modernize recordkeeping, which became a very important event. It was a tragedy, but in the long run an important event.

We all know where Earl Baysinger stood on things because those of you who know Earl, he's a very energetic, engaging person. And he came to the banding lab as chief in '64, with reform on his mind. And he published the last of the bird banding notes. And it was a huge work, 61 pages; he was calling for ambitious overhaul of the banding lab. He was full of philosophical discussions, pragmatic discussions, new procedures and policies. And Earl was attempting to drive banding towards more scientific purposes, to serve those needs of management. He went so far, as like every other chief has had to do, to cooperate, or inactivate some banders.

During that era we moved into Gabrielson Lab, a wonderful event. Something on the side happened in the '60s too that would profoundly affect bird banding and work at the Patuxent. Three fellows; Richard Cormack, George Jolly, and George Seber, working independently, developed some new survival models. And they were stochastic models, and vastly superior to the old life table methods of analyzing survival.

In '71, George Jonkel became the fifth BBO chief. And George was very, very supportive of non-game bird banding. And these are just two examples, you may remember Kathy Klimkiewicz, and here's Matt in his early days banding non-game birds.

There were external influences in the '70s and '80s that also came into play that would advance non-game bird banding and work, the Endangered Species Act. The federal government now had statutory responsibility for these species. Four delegations were coming to the U.S., the banding office, to learn about it. Technological advances were occurring. And there was a great increase of ornithologists at universities and non-governmental organizations and agencies. Those of you who are veterans, think about and remember back to the '70s and '80s, like once a month some new biologist was walking up the street, you know. It was wonderful. Desktop computers, more statistical models.

Now during that period of the '70s and '80s and into the '90s, the banding lab continued to support research in traditional ways, providing bands, permits, etcetera. There's Tom Dwyer, he did those years of good woodcock here along with Dick Coon. And there's Matt again, with his canvasback work.

I like to think, however, that where the banding lab provided its greatest support was to those people who were getting involved with the development of new analytical models.

One of the seminal publications that came out in that era was Brownie and Robson's paper in biometrics. And I throw Ken Pollock in there too because I think he was a student up there at the same time, working peripherally on these things.

Well, this paper, people at Patuxent, particularly David Anderson, jumped right on this. They saw the value of this and could see where things were going. So you had guys like David Anderson, this is a later picture in his career, and Ken Burnham, who was here for a number of years, they're flanking, they're calling Gary White out at Colorado State.

Well, Anderson and Burnham jumped right on this stuff and then we saw this proliferation of the, of Mallard work again, the Mallard driving everything.

And some classics came out of this; temporal and geographical estimates of survival, recovery, and harvest rates; big stuff, driven by the development of these models and the need for data on the Mallard.

Well, you know the story of the other people who came on; Jim Nichols arrived in the '70s, Conroy came, and I wish I had time to tell you my little... I do have the time to tell you a two-minute story about Jim Nichols since he's not here!

I was working in the banding office at the time and was sort of a junior biologist in charge of the recovery end of it. And they hired this new biologist, Jim Nichols, Dr. Jim Nichols. And he had studied alligators. And back then I was in my stovepipe thinking mode, and I thought, 'that's peculiar, to hire a alligator guy to be like a bird biologist.' But anyway, he was a good fellow.

And he came into my office one day and he says, "I'm working on the Mallards." And he says, "I understand you have a file that has these records of where banded Mallards have been recovered." I say, "Yes, that's the recovery file." And he says, "Is the banding record linked to that?" And I say, "Yeah." And he says, "Oh good." About two days later he came back and he says, "Do you guys have a file that would have all the records

of Mallards that were banded but not recovered?" I say, "Well, yeah, that's the banding file?" And he says, "Okay, good. I think I need that too." And look where he went since then!

Well anyway they developed a..., they started to develop tools for other people, like the handbook that were very important. White and Burn developed Program MARK; it's still the workhorse for anybody doing migratory bird survival analyses.

Then the books started to come out; Nichols, Conroy, many, many other works that are too numerous to mention. They're cited everywhere. This work, it's gone all over the world, what began here at Patuxent.

I came onboard in '89; I was very privileged to be at Patuxent at that exciting time and to get involved, peripherally at least, with guys like Nichols over there. They kindly included me in things like year-end technical conferences and all that. There was..., and it ingrained in me the important role the banding office was playing in all of this.

And here's another good example of something, and very important that we had a part in, this band reporting rate study determined that the band reporting rate for Mallards was only 0.32. Two out of three hunters that shot a banded Mallard didn't report it, a big loss there. And so we were instrumental in administering the banding lab portion of this; processing the reports, processing the rewards, etcetera.

So anyway, that led to some other things, the plans to do something about this band reporting rate. Then, as Mike pointed out in his talk, some things happened politically. Bill Clinton came to office and he appointed Bruce Babbitt. And you don't have to guess what he was going to do at Interior, you remember. And then you'll also remember that he did it, maybe by administrative fiat, there was no congressional approval, there was no budget for any new agency; he pulled parts out of the existing agencies and cobbled together the NBS. And it was a rough time. And you remember, you veterans will remember Babbitt soon ran afoul of western governors and members of congress. And before you knew it, yeah, NBS was done. We were now in the USGS.

Well, that was a, that was a rough time in the banding lab, to deal with all this change. And I strongly felt, and I think I was right, that NBS didn't fully appreciate what we did. USGS appreciated it and understood it even less. And so, as somebody pointed out earlier in the talk, the budgets were getting raided, yes, they were coming after the budget in the BBL. All this stuff was going on, it was a trying time, but we survived. And in a few years we convinced those administrators that this indeed was a very important program. And it was because the groundwork had been laid, the relationships established

among management, research, and the banding lab. And we were critically essential to things like developing a 1-800-number system to improve bird banding report rates.

So, that and another seminal event was NBS put together a panel of distinguished scientists, led by Paul Buckley, to evaluate the banding lab operation and banding lab program. They did a very thorough job, and I thought, I thought an excellent job. It took them a long time. But out of it came some very, very sound recommendations.

One of the big ones was that the prompting the BBL and its administrative units above to change computer operations. We knew internally we needed to do that, it was a big task, but it needed some impetus and the Buckley report provided that.

So, gradually things got better within USGS. And I left in 2002, and Monica became the seventh BBL chief. Monica advanced the development of the new computer system at Patuxent and did other things to advance recommendations out of the Buckley Panel Report. [Did I spell 'chief' wrong? Oh my.]

Well, in 2008, Bruce became the eighth chief. Bruce has continued to advance the banding labs programs; you're now reporting your band recoveries mainly over the internet. I just learned visiting the office the other day that they're the..., that they're doing away with paper certificates of appreciation, you get an electronic one or print your own.

And so when we think about this and how far we've come, it's been a remarkable relationship among the banding lab, the research people here, and the migratory bird division people here. It's wonderful. I'm really proud and grateful that I had a part in it.

And when we maybe look to the future, what do we think is going to happen in the future? Well, we still got people thinking about the models, working on that stuff. So that keeps going. We've got a new generation of people out there, banders, who are tackling migratory bird issues. And they need information; they need this banding technique, etcetera. I took this picture at IOC last August. It's the new face of western hemispheric bird banding. There are a few less veterans in here. Somewhere in here is C.J. Ralph is over here. But this is the new face of bird banding. And they're going to need support with models, support from banding office because, going back to the very start here, as Paul Bartsch said in the beginning, "There are still many unresolved, unsolved problems about bird life." So we go on.

Thank you very much.

David Trauger:
Well, we've done very well. I want to commend the morning speakers; we are finishing up ahead of time. And are there any questions for John or any of the other speakers this morning that you passed on asking earlier here?

Audience:
I want to know if John still has his red corduroy pants.

John Tautin:
Yeah, can you hear me from here?

Audience:
Yes.

John Tautin:
I have red corduroy pants; I had to get a new larger size!

David Trauger:
Any other questions? If not, we'll re... Oh, okay, yeah.

Audience:
This is a general question. You had a unique partnership between the banding lab, migratory birds, and the management program, research management application. What lessons have you learned from that that might be applicable to some of the other programs that are ongoing? Because that research and management partnership seems to be something that's very elusive for us.

John Tautin:
I don't think there's any procedural or institutional answer to that. I think it depends a lot on the people involved with the programs. You have to park your ego at the door, you have to be willing to reach across the table and reach out and get out and get involved and work with these other people. And we had, I think, a remarkable group of people at Patuxent during those years who had a lot of mutual respect and generally wanted to work together to make this happen.

David Trauger:
I think that's a very appropriate topic for discussion. I think that research management connection or disconnect is a pervasive one throughout science, and throughout many other disciplines, not just wildlife ecology. And there are lots of, lots of papers and a lot of people who've wrestled with that issue. But I think that the adaptive management

approach that we have pioneered here at Patuxent, you know, I think provides an approach there that I think merits a lot of additional work.

Any other questions or comments?

Okay, we're going to reconvene here at 1 o'clock sharp for the afternoon program. We're going to deal with environmental contaminants this afternoon, which was introduced earlier, but we're going to really focus on that this afternoon.

And again, I want to commend the morning speakers and thank them for their contributions. This was very informative and, I think, really has set a high bar for the rest of the day, and, and we look forward to that.

So now we'll go over to the lunch room where they will have our afternoon lunch.