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Interviewee: Philip L. Wright  
Interviewer: Wendy Hall  
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Wendy Hall: Interview with Phil Wright on January 8, 1992, in the Biological Sciences Building. Phil, my first question is where did you grow up?

Philip Wright: Okay. I was born in Nashua, New Hampshire, 1914, on the ninth of July. I was the second of four children.

WH: What was it like where you grew up?

PW: It was an industrial small city in central New England. There were several manufacturing concerns there. They made cotton cloth, they made clothes, they made ice cream freezers and bread wrapping machines. It was an industrial city.

WH: What did your parents do for a living?

PW: My father was a certified public accountant, a CPA. He had never gone to college. He had graduated from Nashua High School. He was valedictorian of his class, about 1904, and his wife was the second one in line behind him in scholastic rank in the class. My father...there were businessmen in Nashua that recognized him as a bright young man and offered to send him to college. His mother was an uneducated person. She felt that that’s where young men lost their morals, was in college, and she refused to let him go. He never went. He was very much determined that all four of his children were going to go to college and they all did. Left him a pauper, but that’s what happened.

WH: What kind of activities were you involved in while you were growing up?

PW: I was interested in natural history from the time that I was a small child. I was bird watching on my own by the time I was ten years old. Although I came here...one of the things which I came here to teach was ornithology. I never had an ornithology course, but that, of course, was not so rare as it may sound because there were very few ornithology courses offered. I started college...I started at University of New Hampshire in the fall of 1932. I don’t believe there were ten universities in the country that had an ornithology course at that time.

WH: What kind of activities did you do with your parents?

PW: I came from a very religious family. They were Baptists. My mother’s father was a Baptist clergyman. So we were very active in the church as children. When I was fifteen years old, they
started the National Boys Band. I immediately joined the band, and was assigned the mellophone, which is an alto horn. I played this horn for three years in high school and then I played in the college band for two years. I played the horn quite a lot. I played a solo once before an audience, big thing in a sixteen year olds life. Much more so at that time then today because, today, kids do everything. In my time they didn’t. We went to school and came back from school and read our books and did our homework. Extracurricular activities were pretty scarce when I was a child.

WH: Who, if anyone, interested you to study, in your case, Zoology?

PW: I had an uncle who was a Zoologist and he sensed that I had an unusual interest there. He was already familiar with the professor at the University of New Hampshire, who actually, when I went over there, really kind of took me under his wing. So as a freshman I essentially had what we would call today a work study job at thirty-five cents an hour. In high school, I was very much interested in taxidermy. I took a correspondence course in taxidermy, which was very common in that time. Every sporting magazine had this ad for this course in taxidermy. You would find if you went through the field that many of the zoologists, the people that got into wildlife, had taken a course in taxidermy initially. I took that course. I was preparing bird specimens when I was in high school. We were active kids. My older brother and I were very active. We hiked. We collected frogs. We climbed hills. We went to the beach. That was a time (unintelligible). That was a time when many of the New England people had never been outside of New England.

WH: Where did you obtain your undergraduate degree?

PW: I went to the University of New Hampshire in 1932. I made it in Zoology. I had a big event in my young life. I was not a top quality high school student, I graduated right in the middle of my high school class. Yet, I had this intense interest in animals. In the fall quarter of my sophomore year, I was enrolled in a course in comparative anatomy with all of the pre-med zoology majors. There was no wildlife curriculum there at that time. We had to do a special project in order to beef up the work we were doing in this anatomy. I decided that I was going to prepare a turkey skeleton and I remember I spent the entire Christmas vacation my sophomore year preparing this turkey skeleton. I brought it in at the end of the vacation, turned it over to the [professor], and they were amazed. That kind of thing, of course, today is done by all kinds of kids, but at that time that was an unusual event.

The result was that I attracted enough attention and I got enough pats on the back, so that I started studying intently. It was a great event in my...I was nineteen years old...to come up with the highest grade in the class in comparative anatomy when I had never been known as a student before that point. Eventually, there was a Phi Sigma award at the end of the year, and I won the award for being the outstanding student in biology. So that’s how I got started. The rest of the story is that... the University of New Hampshire operates now, as it did then, a biological station out on the Atlantic Ocean on the Isles of Shoals. I was encouraged to go out
there. At the end of my sophomore year I went out there and took a course in invertebrate zoology from a Wisconsin professor. I did well and attracted the attention of people to the fact that I had some scholastic ability. The next year the professor there at the University of New Hampshire by the name of Jackson encouraged me to...the University of New Hampshire...at that point, no small university had any doctoral programs, but they did have a master’s program. This [professor] encouraged me to work on a master’s degree about the birds on the Isles of Shoals.

The summers of 1935 and 1936 I spent full time studying the birds of the Isles of Shoals. I got a master’s degree essentially in four years, plus a bachelor’s degree. At the end of that time, I applied for admission to graduate school at Wisconsin and was admitted to Wisconsin as a PhD candidate in Zoology. I went there in the fall of 1936 and, in the summer of 1939, right after I had married, a vacancy appeared in this university [University of Montana]. They wanted a third person in Zoology, the Zoology Department consisted of three people at the time. They wanted a series of courses taught, which included mammalogy, ornithology, general zoology, histology, and that included, of course, a micro-technique. They also wanted someone who could teach a course in parasitology. I, as a guy who just turned twenty-five, and had had a successful career as a graduate student at that point—although I was still working on my degree—was encouraged to apply for this job here. I got the job in late August of 1939. The salary was $1800 dollars a year. The rank was an instructor.

So I came...we came...the bride and I came in our Model A Ford, drove over from Wisconsin to Missoula. I always told students in later years that we came to Montana in a covered wagon. We didn’t, but we came in a Model A Ford. That’s how I came here.

WH: What encouraged you...what made you want to go on to get a higher degree other than just an undergraduate?

PW: It was the thing to do. Anybody at that point...and it’s true today. If you want to become a Zoologist today, and you take a zoology major, if you have the ability to do it, the interest and the drive, then that’s the most likely avenue that you would take. It’s a little bit like the student coming in to enroll in a pre-med curriculum. What’s he going to do that for? To get an M.D. Why do zoology majors get a PhD in zoology? Essentially, it was a pretty simple situation at that time.

WH: Was there anyone in particular who influenced you into going on?

PW: Oh yeah! This professor, Professor Jackson, at the University of New Hampshire encouraged me a great deal. I’d made a good impression on the Wisconsin professor, so they accepted me into the program here, which they might not have done on the basis of my grades alone. My high school grades...and as a college student, I was not the kind of college student who earned As in every course that I took. I would take the biological science courses—the botany and the zoology courses—and, during my senior years, would get the highest grades in

Philip L. Wright Interview, OH 276-001, 002, Archives and Special Collections, Mansfield Library, University of Montana-Missoula.
the class. I did enough of that so...this was, of course, before there were graduate record exams and that sort of thing. I was confident that I could do it.

WH: What was your main emphasis when you went to obtain these degrees?

PW: I was interested in both mammalogy and ornithology. The University of Wisconsin did not have specialists in either of those areas. Someone else in my position might have attempted to transfer to the University of California at Berkeley, Cornell or perhaps University of Michigan. But I qualified for an assistantship and I was getting (as a graduate assistant in zoology there) $65 dollars a month, $650 dollars a year and I lived on it. In fact, I bought an automobile and drove an automobile on my $650 dollar a year income. In other words, I was willing to stay with the program because I could see that I could fit in it. I could take the necessary courses and get a degree there even though there was not a specialist in either ornithology or mammalogy.

The rest of the story there was that I took a course in endocrinology, which was fairly new at that time. Endocrinology, the study of endocrine glands, was taught by an eager young professor and most of the work at that time in the lab...he had lots of graduate students...most of the work was being done with rats, rabbits, and guinea pigs. I wanted to do some endocrine studies on wild animals. In 1937, on the basis of then having a background in endocrinology, I’d found a problem, which I wanted to work on, and I worked on it for thirty years: the problem of winter whitening of mammals that turn white in winter and brown in the spring. I decided to work with weasels. I worked with weasels here for twenty-five years. We were concerned initially not about the problem of why do they turn white in winter and why do they turn brown, but how is this controlled? What sort of mechanism is it? The pituitary? The gonadal hormones?

Once I got started working with weasels, we discovered—I didn’t make the original discovery, but I made the original discovery for that particular species—many of the weasel family have a phenomena in their reproduction called delayed implantation, in which the embryos become inactive in the female reproductive tract for several months. This theory was just beginning to unfold, so that most of my early research was done describing the details of this delayed implantation. I eventually described it, not only for the long-tail weasel, but I made some contributions about the marten. We discovered delayed implantation in the wolverine. We made definitive studies on the badger and so on.

That was the way I got interested in the thing. The original question, which I posed back in 1937 about how is the molt controlled...the animal that turns white in winter and turns brown in the spring does so by shedding all of his hair, he replaces it with hair of a different color, and then, in the spring, he does it all over again. In a sense the original question has never been fully answered yet. We know a great deal more about the phenomenon, but I thought it was going to be a real simple thing, the change of color being caused by the gonads. If we castrated the males, maybe they would not turn brown in the spring, that sort of thing. It was much, much more complicated than that. But that’s how I got started in that direction!

Philip L. Wright Interview, OH 276-001, 002, Archives and Special Collections, Mansfield Library, University of Montana-Missoula.
WH: What types of courses did you take?

PW: At that time, a doctoral candidate at the University of Wisconsin—and Wisconsin at that time and still is one of the top universities in the country for earning a PhD in zoology—virtually all the courses that I took were simply different kinds of zoology courses. I really never took...at that time...It would surprise some of my younger colleagues, but I never took what we would call a graduate level course. Here you have a graduate student, you have a bunch of them; they take a course with a five hundred number, and there would be nobody but graduate students there. The way that the Wisconsin program was set up was that you were expected to take essentially courses in every field of zoology which they offered. I had a minor in botany and I did essentially the same thing there: systematic botany, the morphology of the fungi, and, of course, plant geography. I look back at it, and anyone would if you were really critical, and say “But you didn’t take any graduate courses!” Few zoology graduate students did.

When it came up to a position like this here in the small zoology department that had a curriculum with fifteen courses in it, I had had courses in all of these areas. I said, “Look, I can teach a course in ornithology. I can teach a course in mammalogy. I can teach one in histology.” Essentially, that is what we had to demonstrate to the faculty here when I applied for the position. That was the basis, I’m sure, on which I got the position. This was in the Depression. They never told me how many people applied for this job, but I would guess twenty-five or thirty applied for it.

WH: What difficulties did you have to overcome while you were a student?

PW: At that time, of course, we had two foreign language requirements: German and French. I had to pass a reading test in both of those subjects. They were both difficult, quite difficult! I look back at it and think, “How did I pass those exams?” The answer is...not with flying colors, but I passed them both. That was the most difficult thing.

In terms of taking a course in zoology or in botany, in which there was a lot of factual material handed out, I maybe had a couple minor stumbles along the way, but, essentially I had the ability to do that kind of thing. It’s so obvious to me having worked with students and seen students taking my courses over the years. The kind of students who did best in my courses here was one who, in the first place, had an intense interest in the subject but he also had to have the ability—whether you explain the situation to him clearly, graphically—that you only had to show him once and he got it.

WH: How did you pay for your education?

PW: My graduate school, I was on a graduate assistantship, and I paid my own expenses there. My father and mother were poor, and I had a few dollars from work that I had done. I
borrowed a little money when I was an undergraduate and paid it off after I came out here. Going to a small state University was not as expensive then as it is now.

WH: Have you been married before?

PW: I was married in July of 1939 to Margaret Albert. She had a Master’s degree in Zoology at the time. I got the job here within a month of the time we were married. We came out here and had three children. The older one is named Alden. He’s over in Computer Sciences now; he’s a professor in Computer Sciences. The second one is Phil Jr., he lives in Seattle. He’s a CPA and a business manager of a sporting goods company. My daughter is also in Seattle. She’s a musician and a foreign language expert. She teaches foreign students the English language. She’s spent a little bit of time in Algeria, Laos, Canada, and that sort of thing. I have three children and I have four grandchildren. Two grandsons who are twenty-one and nineteen and then two granddaughters who are eighteen and twelve.

WH: What was your daughter’s name?

PW: My daughter’s name is Anne.

WH: When did you meet your wife, Margaret?

PW: In graduate school in Wisconsin. She was taking some of the same courses that I was.

WH: Were you married again after...?

PW: We were married for over forty-nine years. She died of breast cancer in 1988.

WH: How did you meet your second wife?

PW: She was in the Missoula community and I had met her. She worked in Clancy Gordon’s lab for fifteen years. Let’s just say that I became acquainted with her through the usual circles. I don’t know that anything special needs to be said about it except that we’ve been married now for two years. She was born in Germany. She’s in Germany now. She comes back Friday night. She’s an expert in taekwondo, she’s taught the taekwondo program here for sixteen years. She teaches the little kids taekwondo. She’s been doing that for twenty years.

WH: What is her name?

PW: Hedwig. Her maiden name was Vogel, which means bird.

WH: What role have your wives played in your career?
PW: Margaret Albert was, throughout the forty-nine years we were married, a very extremely supportive and understanding person about my career. She was totally unselfish about modeling her life around my profession. She was an excellent mother who did a great deal in the rearing of our children. All of our children, we felt at the time, shouldn’t go to the same school that their father taught in. The children were all sent away. The older one, Alden, graduated from Dartmouth. The second boy graduated from Whitman College in Washington. The daughter graduated from Carleton College in Minnesota. But both the daughter and the second son have master’s degrees from this University [of Montana]. The second son, Phil Jr., has a master’s in business administration. He got his CPA here. The daughter has a master’s degree in violin, she’s a violinist. The older son has a PhD in zoology from the University of Wisconsin. Rarely does a professional man have the supportive wife that I had.

WH: What role has your second wife played in your career?

PW: Well, Hedwig has got a very warm personality. She likes the same things I do, enjoys the work with the birds. She’s also a hunter. I’ve taken her to Africa hunting and New Zealand last spring. We are just an extremely compatible couple.

WH: Did any of your children—you said your second son, correct, Phil? He got a degree in zoology? Has he followed in your footsteps?

PW: None of the three children became biologists. I think it’s just as well. People have often said to me, “Why didn’t your kids all grow up learning all about birds?” I think the answer is something like this. For thirty-eight years I taught ornithology every spring. Eventually, the class increased in size and the number of students increased. It became essentially a seven day a week teaching experience. I often had as many as eighty or ninety students in ornithology, every student took a field trip every week. When Sunday came along—

[End of Tape 1, Side A]
PW: —the desire at that point to spend the seventh day of the week teaching the kids about birds. Both the boys were hunters, they were both fisherman. They were both very active people. The older one is best known as a cross-country skier. He ran all sorts of fifty kilometer races. The younger one is too busy in Seattle to do it. The three children, we got together at Christmas time over in the North Cascades. Both Margaret and I were extremely happy with our children and what they accomplished.

WH: How many siblings did you say you had?

PW: I was one of four. I was the second one. My family was one in which my mother was the oldest of four daughters. There were nine cousins and of the nine cousins, six of them were my elder. All six of them earned doctor's degrees. One MD and the other five are PhD. Both of my brothers are PhDs, the older one in biochemistry, the younger one in zoology.

WH: Did you say you have a sister too?

PW: I have a sister, yes. She has a bachelor’s degree, but she doesn’t have an advanced degree. The other two cousins, the other girl cousins, were very active and bright women, but they never earned doctorate degrees.

WH: Where were your parents originally from?

PW: Where were they originally from? My father’s family came to New Hampshire in the 1700s. If I were to show you the little town of Hollis, I could show you a plaque in the commons of Hollis, New Hampshire where the names of the Minutemen who went off to fight the battles of Lexington and Concord are inscribed. Two of my great-great-grandparents fought in the Revolution.

The Weiss family, they were French Huguenots. I don’t know exactly when they came to this country, but it was a long time ago. They’d been here for several generations.

WH: Did you play any sports when you were going to school?

PW: I played baseball, but we didn’t have Little League at that time. I played tennis. I played a lot of tennis. I was a fair tennis player. I didn’t participate in team sports as either a high school student or a college student. It wasn’t until I was over seventy years old that I earned my first blue ribbon, and since that time I’ve earned quite a number of them in cross-country ski races. I got one Sunday afternoon up here in Pattee Canyon. In cross-country skiing, you race in your age category. If no one will race with you that’s over seventy years old, you come up with the blue ribbon if you finish the race.
When many kids at that time were out playing games, I was out in the woods. Essentially, although I didn’t think of it at the time, I was learning to become a naturalist. I wasn’t planning it that way, but that’s where my interest was. I was out there hunting. When I was a freshman in college, by that time with my ability to prepare specimens of the animals and birds, the professor helped me get a collecting permit. I’ve had a bird collecting permit ever since I was nineteen years old. Here teaching ornithology, I’ve collected lots of specimens, encouraged students to collect a lot of them, and so on.

WH: How did the person who influenced you know you’d be suited for your field?

PW: Because he could see...remember, he taught an advanced course in ecology for the University of New Hampshire. When it came to the field work, he turned it over to me. I was just taking the course! But I had the time to do the field work and teach the other kids about birds. He was my supervisor. He knew I had the ability to work in the field with birds. I learned that on my own, but he knew it perfectly well. I demonstrated it to him many times.

WH: What colleges and or universities did you work at before coming to U of M?

PW: I was at the University of New Hampshire for four years, the University of Wisconsin for three years, and then I came here, so just those two schools.

WH: When did you come to U of M?

PW: September 1st, 1939.

WH: What department appointed you to...?

PW: It was zoology, but I also had to teach a general survey course in botany, a lot of historical zoology, fossil record, that sort of thing.

WH: What type of projects did you work on while you were here?

PW: I already explained that to you. Most of the early work that I did was on the reproduction cycle in weasels, but I also worked on another project, which was part of my PhD thesis that was the reproductive cycle of the male red-wing blackbird, which I did in the first year or two I was here. We demonstrated that the male red-wing blackbird required two years to mature in terms of his plumage, and it also took two years for him to mature in terms of his reproductive cycle. So those were projects which I worked on.

WH: What kind of methods and techniques did you use when conducting your studies?

PW: Much of it was histology. Obtaining reproductive organs, sectioning them, serially sectioning them, and interpreting what was going on in the reproductive cycles from the
histological sections. The wife, Margaret, worked very hard on that over the years, ordinarily without pay. You couldn’t hire your wife to be an assistant back then, you can’t very well do it today either.

WH: Have those methods changed over the years?

PW: No, the methods haven’t changed, but the number of people that want to do that kind of work is much reduced. Very, very few people are willing to do the kind of histology: the cutting of thousands of sections of ovaries and other reproductive organs to be able to do that kind of research. The techniques have not changed a great deal.

WH: Were there any other types of classes that you taught that you haven’t already mentioned?

PW: I taught parasitology a couple times. I was really not a parasitologist. Then I was involved in teaching the biological science survey. At that time, around 1930, virtually every non-science student in the university obtained his science credits by taking a three quarter sequence called “The Collection of Biological Sciences.” The whole spring quarter was based on genetics and evolution, with a lot of information in there about the fossil record. I’d had a course in paleontology as a graduate student. I carried that aspect of biological sciences for quite a number of years and gave the lectures in it. Talking about the history of life on earth was something which I was drawn into.

WH: What challenges did you face while you were at this University?

PW: I really don’t know how to answer that. I came here as a young professor and I continued to strive to be the best. That’s what any person in academia should strive for. That’s all you can say.

WH: What parts of the country have you worked?

PW: I remember a student in a questionnaire—of course, students now all have an opportunity to evaluate their professors—in responding to the question, “What did you like most about this professor’s teaching?” His answer was, “I like most of his accounts of his experiences in faraway places. Wright has been everywhere.” I was on sabbatical in South Africa in 1970, where we spent six months in 1970. I had a lot of material from that work that enabled me to use information about the wildlife of Africa. I hunted big game extensively. I hunted in British Columbia four or five times, I hunted in Alaska, the Yukon, the Northwest Territories, Newfoundland, Quebec, Africa, New Zealand, you name it.

WH: Were there any places in the United States other than Alaska that you’ve done things?
PW: I was invited to go to Arizona State in 1980. I went to Arizona State as a Maytag Professor of Zoology. I was there for one semester. I wasn’t doing field work there. I’ve visited all parts of the country, but I’ve not really done research in the field anywhere else except in Montana. I cooperated—one of my major projects was an account of the reproduction and growth of the fisher. All the material came from the state of Maine, but I didn’t study in Maine. A collaborator collected all of the material there and sent it here.

WH: Have you worked for any agencies?

PW: I worked in the summer of 1942...I worked for the Montana Fish and Game Department. At that time, they were just beginning to survey the wildlife in the state of Montana, and I had the opportunity to handle a crew of field workers who were working on the upland game birds of Montana. I was the leader of the Upland Game Birds Project in summer of 1942. I got $250 dollars a month for that, my field workers got $150. At that time—that was in the summer of 1942—I visited with the crew (there were six of us), and we were crisscrossed the state. That’s when I became familiar with the state and the various counties, and learned about wildlife was in them.

WH: Were there any other agencies you worked for?

PW: Not really. I collaborated with the Fish and Wildlife Services. As a teacher, we did extensive collecting of, particularly, mammals in Glacier Park. We did that through the Biological Station. After all, I taught at the Biological Station for many years. Later on in my career here, we conducted various research projects on the Bison Range and I supervised a number of those.

WH: What was it like to work with those different agencies?

PW: Not particularly different from what we’re doing here. You had a job assigned and you go out and do it. I didn’t think about how different it was. It wasn’t that much different I would say.

WH: What kind of graduate, post-graduate, projects did you supervise while at the university?

PW: I had three doctoral candidates. The first one, who is known best here, is Bart O’Gara. He did a study on reproduction in the pronghorn. He’s become very well known as a wildlife biologist. Another doctoral candidate that I had was Rodney Mead. Rodney Mead is a professor at the University of Idaho. He carried studies of this phenomenon of delayed implantation, much farther than I have, and he’s become extremely well known in that area. The third candidate is Robert Sheldon. Robert Sheldon, I think, teaches at a university in the Midwest. I don’t have recent contact with him. I handled...I would say, I have a list of them. I could give you the list if necessary. I supervised I’d say fifteen or so wildlife master’s students, and they worked on everything from soup to nuts. Pheasants, checkered partridges, the marten in
Glacier Park, reproduction in elk, aging of pronghorns, pygmy nuthatches, Townsend’s Solitaires, you name it! I had graduate students in many of those areas.

WH: How were your projects funded?

PW: The wildlife graduate students’ projects were generally funded through the wildlife research unit. I was raised in a time that, in order to...if you had the kind of background and interests that I had, you didn’t necessarily have to have a big federal grant in order to carry out a research program. I had small grants from the university. They tell me that I had the second federal grant here in the history of the university. I had a grant from the National Research Council Committee for Research in Problems of Sex. That was way back in 1942. I had some NSF [National Science Foundation] grants, some fairly substantial NSF grants, which financed two of my doctoral candidates, Sheldon and Mead. Those were the main sources of money.

WH: Were there any students in particular that were the most memorable?

PW: Any students? I wouldn’t want to enumerate them. I’ve probably had a hundred superior students that are absolutely top quality students. I wouldn’t want to enumerate them because, in enumerating a hundred students, number 101 that I left out might have been just as able as number 20. His feelings might be hurt if I left him out. Or her.

WH: Did any of your students become well known?

PW: Yes, certainly! Bart O’Gara became extremely well known! After all, he got medals from the Fish and Wildlife Service for his outstanding work. Rodney Mead has outstanding teacher awards at the University of Idaho. Rodney Mead has I don’t know how many...certainly a million dollars of research money since he’s been at the University of Idaho. I’m guessing at that. Lots of students that are excellent students.

WH: How did your role in your department change over the years?

PW: It changed very marginally. When I came here, I was the youngest member of the entire university faculty. I was the lowest paid and the bottom man on the totem pole. Eventually I was chairman of Zoology. I was chairman for fourteen years.

WH: What other faculty positions have you held besides the ones you just mentioned?

PW: I was acting Director of the Biological Station informally for many years. I was up there when Gordon Castle, who was the director, was down here. He was the dean of the college down here. Then, of course, I was in charge of the wildlife curriculum for many years. At the time, there was no title associated with it. The president simply said, “Phil, you’re in charge of the wildlife curriculum.” Did he pay me any more money? Did he get me any additional title? The answer is no.

Philip L. Wright Interview, OH 276-001, 002, Archives and Special Collections, Mansfield Library, University of Montana-Missoula.
WH: How have ethical standards in your field changed during your career?

PW: I wouldn’t say they’d changed at all, from my standpoint. In order to be a scientist, and to do original work in science, you have to be totally honest with your results and what you’re doing while you’re doing it. I don’t think there’s been any change in ethics with respect to my profession.

WH: What professional organizations have you belonged to?

PW: I was active in the American Society of Mammalogists. I was the elected director for four different terms. I was a trustee for several years. We invested the society’s money, half a million dollar’s worth of the society’s money. I was the associate editor of the Journal of Mammalogy. At one time, I was the associate editor of the Journal of Wildlife Management. I did some editorial work. I was a member of the American Ornithologist Union, they were a wildlife society for fifty years.

The organization I spent the most time on since I retired from full time work, which was in 1977, has been my work with the Boone and Crockett Club. The Boone and Crockett Club, as you know, has just recently endowed a professorship on this campus. I’ve been active with the club ever since in 1971. I was immediately brought into function and maintenance of the records and big game trophies. I still spend—I was on the phone this morning talking to a biologist in California about a records problem. Because of my background and reputation as a mammallogist, I’ve been able to be of considerable help in maintaining the records keeping activities of the Boone and Crockett Club. They made me an honorary life member about eight years ago. In the hundred years of the club there are, I think, twenty-three honorary life members. In other words, the Boone and Crockett Club has been extremely grateful to me for the work which I’ve done in record-keeping and, for that matter, in helping evaluate projects that are to be conducted by graduate students.

WH: Have there been any community organizations that you belong to?

PW: I was on the original board of directors of the United Way. We called it the United Givers. I was one of the original group that organized and funded the Montana unit, Missoula’s United Way.

WH: How have the trends in the field affected the projects that you’ve done? Or have they at all?

PW: The kinds of things which graduate students do today tend to be different than what they were doing when I was having grad students. I have not been the chairman of a graduate committee since 1977, but I’ve served on quite a number of graduate committees since that time, including several in Geology and several in Forestry. I think that the nature of research
projects are quite different than what they were when I was working in this area. In other words, if a graduate student came to me thirty years ago and he wanted to study a project in ornithology, we would find some common local bird which has never been thoroughly studied and say, “Why don’t you go and study the life history of this bird?” Today the projects are more specific, more concentrated on some particular aspect of an animal’s biology, whereas, in my time, almost anything which we did was original.

WH: Have those trends had a positive or negative affect on what you did during your career?

PW: Let’s pass on that one. I can’t say anything very appropriate about that.

[End of Tape 1, Side B]
PW: —there are five times as many students as when I arrived. Today the exchange between the different departments is, with some exceptions, at a much less active level than when I first came here. The answer is, of course, when we came here, the number of faculty people who were actively doing and publishing significant research in their field was very small. There weren’t over ten of us in the entire faculty in 1939, ’40, the early forties, who were actively conducting research projects here on this campus. Now, of course, there’s a great many of them.

It was simply true, though, in the Zoology Department...the personnel that was in the Zoology Department was such that, within the group of them, in which I was a junior member, that we were expected to do research and that’s how we got started at it. Yet lots of faculty members with much heavier teaching loads than they eventually had simply made no effort to do any original research at all. They...in the sciences and in many of the areas that have active graduate programs, research activities is a very significant part of what they’re expected to do. Not true when I came to the University.

WH: How was the Wildlife Biology Department started?

PW: The wildlife biology is not a department. It never was, and I hope it never will be. It’s an interdepartmental program in which Forestry, Zoology, and Botany all participate. It is an interdepartmental program. It is assigned aspects of...it is assigned to the School of Forestry for administrative purposes, but the director of the Wildlife Program right now is Andy Sheldon, who is a zoologist. The previous director was Lee Metzger who was a zoologist. Before his time it was [W. Leslie] Les Pengelly, and then Mark Behan was in charge of the wildlife program at one time in Botany.

WH: How was it started? Was it a decision by the administration that this should be created?

PW: No, it was a decision generated within the group themselves. We had the two curricula, we had this wildlife management curriculum in Forestry and we had this wildlife technology curriculum, which was handled by Botany and Zoology, and in which Forestry participated. The wildlife biology program, I’m not exactly sure when it came into effect in that way, but I would guess it was in the late forties. I’m guessing. Of course, one of the big factors in the success of the wildlife program here is in the Cooperative Wildlife Research Unit, which was set up in 1950. This, of course, is the U. S. Fish and Wildlife Service, Montana Fish and Game Department, University Wildlife Management Institute all participating together. The first leader of that group was E.L. Cheatham. He came in 1950. He left in 1952. John Craighead came after that time and then Bart O’Gara succeeded him in...I don’t know, sometime back fifty years ago or something of that kind.

The Wildlife Research Unit provided extra money from the Fish and Game Department, from the Fish and Wildlife Service, so that the graduate program really, really started in 1950 as an
active program. Students were able to have a master’s degree in wildlife biology. You still can’t today earn a doctor’s degree in wildlife biology, but they can work either in Zoology, or conceivably in Botany or in Forestry on a doctor’s degree in any one of those three areas.

WH: How did the Wildlife Program work when it was split into two majors?

PW: It worked, but the wildlife management curriculum in the Forestry school...every forester had to have a core curriculum at that time. They had to have chemistry, physics, zoology, a lot of botany...essentially what happened was that the wildlife management candidate in Forestry...it might have taken him five years to get his degree, but he had more courses in zoology. He had ornithology, mammalogy, and the animal ecology, which the general forester didn’t have. The wildlife Biology curriculum, I think, has been successful because you had an active faculty that was constantly reviewing the curriculum. We’ve had the aquatic option for many years. As one who participated in it for all my entire academic life, I just feel that it has been a highly successful curriculum. Yet, a critic might say, “It isn’t up to you to make that decision.” Well, I’ll make it anyway. (chuckles)

WH: Who led the two majors?

PW: Until...Melvin Morris was professor of range management in the Forestry school who was interested in wildlife. He taught an elementary course in wildlife management from the time that I first came here. When the Forestry school expanded, they brought in a wildlife professor by the name of Richard Taber. Taber appeared and taught additional courses in wildlife management. Then Pengelly came shortly after Taber did, and he came to be an extension wildlife specialist. Eventually, when Taber left to go to the University of Washington about twenty years ago, Les Pengelly joined the faculty as a wildlife professor. Eventually, of course, Melvin Morris retired and he died here several years ago. Melvin Morris, until Taber came, handled the forestry students majoring in wildlife management. In the biological sciences, a botanist by the name of Joe Severy was in charge of the curriculum when I came here.

Eventually, during the administration of Carl McFarland, who had a very stormy history here...Carl McFarland turned the supervision of the wildlife program over to me. I carried it until they went into the wildlife biology program. I don’t remember exactly what time that was, but I would say it was when Taber was here, probably twenty-five years ago.

WH: Who taught courses in the two programs?

PW: I taught the ornithology and the mammalogy. In the early days, Gordon Castle taught the animal ecology course. Systematic botany was taught by Leroy Harvey in Botany, who’s now retired and lives in Washington D.C. Plant physiology was taught by Joseph Kramer, a foreign-born botanist. Melvin Morris taught the courses in the forestry school. Eventually, as the faculty expanded, other people were brought in, but those are the people that were involved initially.
WH: Did those professors cross-teach in the two programs? Did one teach in the management and then also teach in the...?

PW: Sure, Melvin Morris taught the courses in range management. He was a range manager, but he had this interest in wildlife as a subdivision of biology. The forestry professors never taught ornithology or mammalogy. The botanists didn’t teach range management. The zoologists didn’t really teach management, except that we did this in seminars. After we had a graduate program, then perhaps we expanded...there was some overlap that way, but we pretty much stuck to our specialties.

WH: How were the two majors different?

PW: The emphasis in our program was on fundamental, biological, scientific knowledge. The emphasis in the forestry program was on forestry.

WH: Why were the two majors merged into one?

PW: We felt it would be better. We just felt we’d do a better job of educating students if we brought them together.

WH: How did this merger come about?

PW: By internal reorganization within the faculty, all of whom were eager to improve what we were doing.

WH: Were there any conflicts in the faculty then? They all agreed?

PW: I could, in a little different circumstance, talk at length about differences of opinion within the various faculty members about various stages in the history of it, but I prefer not to talk about that at this point because it’s a matter of saying uncomplimentary things about professors. I would prefer to pass on that one.

WH: What was lost or gained from the merger?

PW: I don’t think anything was lost, and I think that what was gained was... When the wildlife biology program became established, we developed what we called the faculty of wildlife biology. Before that time, essentially, all these people had their own courses and part of their title was not that of wildlife biology. So my title, still my title, is Emeritus Professor of Zoology and Wildlife Biology. Up until the time that we had the merger, no faculty member had “wildlife” in their title. He was a professor of forestry, botany, or zoology.

WH: Why was the program named wildlife biology instead of wildlife management or...?
PW: Because of the emphasis particularly within the biologists was that what we needed to teach students at the undergraduate level was basic biological phenomena rather than how do we count elk. We eventually, of course, included some techniques of that kind. For example, the aging of big game animals from their teeth was something that I worked in intensively. I had a graduate student work on the aging of pronghorn antelope. That was his thesis. Generally speaking, the faculty were used wherever they had some expertise that was helpful. We knew each other well enough so that we would ask various faculty members if they couldn’t do this. We participated in that fashion.

WH: What problems were there between the Forestry, Arts and Sciences, and Environmental Studies Department?

PW: The environmental sciences program is recent enough so that I served on several committees from environmental sciences students when [Clarence] Clancy Gordon was alive. I was put on because of my knowledge about some bird and mammal situations. If there had been any real conflicts between wildlife and environmental sciences, then they have happened since my time. I don’t know of any conflicts between the groups.

WH: When did the co-op unit arrive?

PW: 1950.

WH: What was the early focus of the unit?

PW: Again, that was when Melvin Morris’ students first studied food habits of elk. We studied reproduction in the elk in the National Bison Range. We studied the aging of antelope from their dentition. Initially, we were studying fairly fundamental problems in wildlife; eventually, we were drawn in to supervise studies that we really didn’t have a lot of background to supervise, but then that was true of wildlife programs all over the country. I think that’s enough on that one.

WH: How has the focus of the unit changed over the years?

PW: I think that one of the things the wildlife unit has done is become international. We’ve had foreign students here from Asia, we’ve had European students here, we’ve had African students here. I would say that is the thing which has changed the most.

WH: How was the unit established?

PW: It was established by the Fish and Game Commission, the University, and the Fish and Wildlife Service all agreeing to establish a cooperative wildlife research unit. It was a very... Unfortunately, in the history of the situation, the faculty at Bozeman wanted the wildlife research unit at the same time that we did. There was some pretty unpleasant outcomes of
that situation. They felt that they should have had the wildlife research unit. Eventually, the situation changed a little bit in that, when they established a cooperative fisheries unit by the same mechanism, the fisheries unit was set up at Bozeman. There was quite a lot of acrimony in terms of establishing the wildlife research unit here rather than at Bozeman.

WH: What advantages or disadvantages have there been with two separate units?

PW: I think that we’ve done aquatic work here for many years. Students were writing theses about bull trout and sockeye salmon fifty years ago, and yet the wildlife biologists up at the water fountain...the aquatic biologists have been perhaps more oriented towards pure science than they have towards the management of fish. There was no great howl here when the aquatic option was established at Bozeman.

WH: Was it a disadvantage to have two separate units then?

PW: Under a little different set of circumstances, I think it would be better to have both units at the same place. On the other hand, Montana is such a big state, and there’s so much important to wildlife that any problem of duplication... The question, of course, has been raised that we need to have an overlapping curriculum at Bozeman and Missoula. The answer which I have taken, and perhaps no one would agree with my thoughts about that in a specific way, is that, over the history of wildlife studies conducted in Montana, and they go back over fifty years, there are enough problems to be studied about both aquatic and terrestrial wildlife so that the curricula at Bozeman and here... I think we have a need for both curricula, both programs. I don’t think the emphasis on the kind of things which are being studied at Bozeman compared to what is being studied here...and perhaps no one would agree with me about this, but I think that generally speaking....the kind of studies by wildlife students at Bozeman have been more directed towards being the projects the Montana Fish and Game Department was specifically interested in rather than ones which... Let’s stop the sentence right there.

WH: How well did the unit integrate with the wildlife program?

PW: Great. One hundred percent cooperative.

WH: Who decided that the unit should start teaching classes?

PW: The leader of the wildlife unit is not, by the original memorandum of understanding, which was signed by all the cooperating agencies back there in 1950... I don’t think there was a specific requirement that the leader and the assistant leader teach courses in the curriculum. I think that, in part, they were encouraged to do this. Bart O’Gara has taught courses in much more—has taken advantage of this position as leader of the unit to teach courses probably more so than most of the wildlife research units around the country, I suspect.

WH: What role has the unit played in teaching classes in the wildlife program?
PW: When the leader and the assistant leader have come in to teach courses, they have taught areas in their specialty which were not well-represented by regular faculty members.

WH: How has the wildlife field, or in your case the zoology field, changed during your career?

PW: I can say that the wildlife field has...we've always required broadly trained people in the wildlife field. The kind of thing the zoologists are doing today have changed more than that in the wildlife field. I may be wrong about that. I may be too far away from it, but I've already explained about what zoologists do today compared to what they did fifty years ago.

WH: What positive and negative impacts have the different federal presidential administrations affected the wildlife field during your career?

PW: There's no question of what... the Republican administrations have not wanted to put money into the conservation efforts. The Republican president in terms of that effort was Ronald Reagan, who was totally unreceptive to projects that involved conservation matters. I think what you could say is that, if you were a student coming out of the program, your chances of finding employment were always much greater if we had a Democratic president than if we had a Republican one. There’s another aspect to this thing too, and that’s why I’m always certain that what we’re talking about here most fundamentally isn’t in these questions! Because you haven’t asked this question and I’m going to ask it and that is what proportion of the students who major in wildlife at the University of Montana are now professionally employed as wildlife biologists? The answer is the minority of them are. We’ve had a curriculum here which has been attractive to a large number of students. Not, by any means—not all of the students who graduate with wildlife degrees are able to find employment with them.

In Missoula, we have lawyers who went through the wildlife curriculum. We have brokers. We have automobile salesmen. We have high school biology teachers. Of course, the wildlife curriculum is such that it’s not a bad curriculum for high school biology teachers, in fact, in many respects it’s a superior curriculum for potential high school biology teachers. In a sense, it isn’t like the School of Law, in which a man or woman gets a degree in law and goes out and practices law. In the wildlife program, way back since fifty years ago, not every graduate of the wildlife program, even though he may have been capable of doing so, even sought to find employment in the wildlife field. He may not have wanted to go that way. Some of them, of course, have come out of an agricultural background, and they’ve gone back to their ranch or their farm. If you were to get a total coverage of what the graduates of this wildlife program, as to what kind of employment they’ve had over the years, it would be incredibly broad! Beyond that of what I’ve already mentioned, too.

[End of Tape 2, Side A]
WH: What impact have the various wars that the United States has been involved in affected the wildlife field during your career?

PW: With tongue in cheek, I’ll simply answer the first one by relating in my own experience... When World War II broke out, the number of able-bodied male students was immediately reduced. It was very early during World War II that it was suddenly discovered that the Air Force was embarking on a program of training potential air force officers by sending them out to programs across the country. This university was assigned one of these units, so that, in World War II, we had air force cadets here on campus. They were being taught chemistry, physics, mathematics, and sociology.

This is quite an aside from what you’re asking about, but when this group of air force cadets was going to descend on us, about eight or nine hundred of them, our Physics Department was down at that point to one professor because the second one had taken off for some war job. The Physics Department and the Chemistry Department and the Geography Department all had the problem of trying to search for and see what kind of help they could get in the training of these air force cadets in their basic training. It just so happens that the three of us in Zoology—Gordon Castle, [Ludwig] Lud Browman, who were both my seniors by eight and ten years—all three of us were recruited to teach physics to air force cadets. I taught physics to air force cadets during World War II. I taught more of it than any other faculty member outside of the Physics Department.

In a sense, the wildlife program was during those years, during ’43, ’44, ’45...the number of wildlife students in the curriculum was pretty small. The amount of teaching which we had in both botany and zoology was pretty much reduced. Fortunately, we were able to pick up some of that slack by teaching air force cadets. As soon as the war was over, we had a big influx of wildlife students, starting about 1945, ’46. You could look at the number of graduates of the program, and I have those figures somewhere, how many students graduated each year. Along about 1948, ’49, we began to graduate fifteen to twenty graduates a year. Eventually, we graduated more than that, whereas up until that time the number of students who got bachelor’s degrees in wildlife in either of the curricula up until say 1945...there weren’t over a dozen of them in the first ten years of the program. World War II pulled potential students away from the program.

The Vietnamese War did the same sort of thing too at a little later stage. We had one undergraduate student that I know of...there may have been others, but we had one undergraduate student who was killed during the Vietnamese War. I don’t know that we had any students enrolled in our wildlife program that went off to World War II that were killed. I don’t know that. This student, his name was Dennis Ashenbrenner (?). He came from Libby. He was very specifically one of our undergraduate wildlife majors who was killed in Vietnam. I don’t know if that answers your question fully, but... World War II affected students in all kinds
of curricula. The chemistry, the math, and the physics majors were in great demand. The humanities people were less so, unless they happened to be foreign language specialists, they might have been engaged in translating German, Japanese, that sort of thing.

WH: What was the impact of the wars themselves on wildlife?

PW: There was an acquaintance I had, a British woman scientist, who worked with weasels. She was older than I, she may still be alive, but I don’t think so. I remember talking to her about this problem, about the British...about the impact of British scientists in the kind of zoology which we were involved in. Her attitude was—she felt the British Isles—and I think this pertains more broadly to the reduction in significance of the British Empire generally—she felt the thing that really hurt Britain was the loss of talented young men in the war. I’m not a historian, and I don’t have any profound knowledge of this particular subject, but my feeling about it is that....of course. We lost great numbers of able men and women, but I don’t see that the progress of wildlife biology, the progress of—the great interest that so many people around the world have in bird-watching. That’s something we haven’t talked about at all. I could talk about some of these subjects for days! I need to slow down for days if you got me on the right topic. In my own mind, I don’t sense that the progress of conservation as we view it today was seriously handicapped by the loss of manpower during these wars.

WH: What effect did the Depression have on wildlife?

PW: Which depression? (chuckles) We have one every two or three years.

WH: The Great Depression.

PW: I think you mean...in the thirties? You have to remember that the whole science of wildlife management did not exist in the early thirties. The programs were beginning to develop in the mid-thirties. I don’t know that I can answer that very well. Aldo Leopold, after he died...I knew Aldo Leopold. He wrote a letter of recommendation when I applied for the job here. I was not his student. I sat in on some of his courses. So much of the wildlife profession... Aldo Leopold was the pioneer in that area. You have to remember that when the Pittman-Robertson Program was established...that was a federal aid to wildlife with the money coming from taxes on ammunition and guns, that sort of thing. The Pittman-Robertson Act was approved by Congress in 1937. It wasn’t until 1941 that it was approved in Montana because states’ rights people didn’t want Fish and Wildlife Services telling us what to do with our wildlife.

The answer to your question is that the wildlife profession did not exist in the early stages of the Depression; it only began to appear by the late thirties. Our curriculum, our faculty established the wildlife...they voted it into the catalog...and one of the things I really wanted to show you while you’re actually with us... I wanted to show you a 1939 catalog so you have a view of what this university looked like in terms of curriculum. In terms of the Great Depression, I think the answer to that is the wildlife profession—professional wildlife biologists.
were just beginning to come on the scene. Before we had a Pittman-Robertson program here, which was established in 1941, the Fish and Game Department had one wildlife biologist in the entire department. His name was [Robert F.] Bob Cooney. He’s still alive and lives in Helena. The wildlife profession didn’t get underway until the Depression was ending up.

WH: Did the Depression have an effect on the animals themselves as far as the populations?

PW: Hard to say. Numbers of big game animals in the history of this country have declined so that when Teddy Roosevelt organized the Boone and Crockett Club in 1887, he and others at that time were concerned with the eventual survival of big game animals in particular in the continent. They felt that maybe we were going to lose them all. The history of conservation in this country is such that...with the exception of the bison, which we lost as a wild animal, but it still could be restored. The history of wildlife in this country has been generally that of markedly increased numbers of game animals of some of these species. We know perfectly well that we have many, many more canada geese in North America today than ever occurred here in primitive times. Many more! The canada geese are all over the country. They’re the prime example of a species of game animal that is responsive to management. The number of deer...they count a million deer in Texas alone. The total estimated number of whitetail deer sixty, seventy years ago was a small fraction of what it is today. We got whitetail deer in virtually every state except California and Nevada; but every other state has got whitetail deer. We have many more of them than we had at that time. The pronghorn antelope was reduced to small numbers and now we kill twenty thousand of them in Montana every year. The elk was at the bottom of big game numbers. The elk occurred in Yellowstone Park, Glacier Park, the Bob Marshall Wilderness, and the Selway-Bitterroot area. As far as the United States was concerned they didn’t occur anywhere else. They’ve been reestablished all over the Rocky Mountains.

WH: What role, if any, did you take in making or influencing the game management policies at Yellowstone National Park?

PW: Give me the question again.

WH: What role, if any, did you take in making or influencing the game management policies at Yellowstone National Park?

PW: I think that the management policies at Yellowstone National Park today, about their elk and their bison, are totally unrealistic. I think every wildlife student that ever came out of this university feels the same way. Yet, I’m not in a position of saying or feeling that my own...I wasn’t out beating the drums about how big game ought to be managed in Yellowstone Park. I would say that virtually every graduate of any wildlife program anywhere in the country today, if he were realistic, would say that the present policy of the Park Service—they think these elk and these bison are somehow going to take care of themselves with the help of wolves or some other technique of that kind—is totally unrealistic. I think that virtually everybody knows that

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and the fact that the Park Service is standing with this approach...eventually, the thing is going to fall down on them.

As you know, bison used to be managed in Yellowstone National Park...they had a slaughterhouse. They butchered the surplus bison and that’s what they need to do today. In terms of my view about it, there’s no other way to do it. They need to go back to slaughtering bison in an organized fashion to keep the numbers down to an appropriate level. This attitude in Yellowstone Park, or any national park, that the wildlife can take care of itself is totally erroneous.

WH: Have you done any work in Yellowstone that would possibly influence...?

PW: No, but I’m familiar enough with the work of other people that have worked in the area. There is a voluminous literature about the wildlife in Yellowstone Park, and essentially all the work done by the wildlife biologists, as far as I’m concerned, totally refutes the whole policy of the Park Service. I don’t know of any situation in the wildlife area where I could say we’re in need of more total overthrow of national policy than that particular situation. We’re lucky, of course, that the elk situation is in part helped by the fact that they harvest elk at the north end of Yellowstone Park by winter months, and that helps. The fact that they hunt elk at the south end of the Park when they come out of the National Elk Range...that is useful. In order to preserve the vegetation of Yellowstone National Park, the Park Service ought to develop policy whereby, by one means or another, they control the numbers of big game animals in Yellowstone Park so they don’t destroy the vegetation. We know, for example, the white-tail deer has been extinct in the Park since the 1920s. If the big game animals didn’t eat up all the vegetation, they would be able to come back there.

In answer to your question, I have not personally gone out to beat the bushes about the matter, but I think that any one of my former students who...and they see that the management of elk in Yellowstone Park has not been really part of the area in which I have taught. In other words, it has been a management program, and I have not really taught big game management except indirectly. My mammalogy course, which I taught for forty-six years, has quite a lot of implications of the biology of these game animals and (unintelligible) their management. I worked it in. Perhaps more than most mammalogy courses taught around the country...my mammalogy course had more game management in it than most of them did.

WH: Have you done any work in Glacier that would have influenced any of the policies?

PW: Not really. In 1953, we...the Wildlife Research Unit, established a marten study in the west side of Glacier Park. Pioneering studies were done on the biology of martens at that time. The three graduate students who worked on it were Vernon Holly (?), who is now retired from the Canadian Wildlife Service, Richard Weckworth (?), who is deceased, and [Charles] Chuck Jonkel. That original marten study was a unique study in that studied a wild population by trapping and recapture and release in a pristine situation. I remember when we went to the park in the early
fifties, Glacier Park, and asked for permission to carry out this study. I remember one of the Glacier Park naturalists said to me at the time, “Well, the marten aren’t any problem to us in Glacier Park. Why don’t you study our elk? The elk are our problem!”

I don’t know what more you can say about it than that. We simply had the opportunity there to do these original, basic studies on the marten, and that was fundamental biology of the marten that these students came up with. We were much more eager at that point to conduct studies of that kind than to get into the problem of the management of the elk in Glacier National Park. I think that the fact that Glacier Park has been able to cope with surplus of elk...their situation is not as acute as that of Yellowstone. The elk come out on the east side of the mountains onto the Blackfeet Reservation and the Blackfeet Indians harvest them in good numbers. Some of the elk come out on the west side of the park and cross the North Fork of the Flathead and are harvested by hunters there in the Polebridge area. Okay. I don’t want to say anymore.

WH: Has any of your work influenced any of the policies at any of the national wildlife refuges?

PW: Oh yes, certainly. The fact that our graduate students here—we studied reproduction in the elk. My graduate students...John Morrison in particular, who is now a wildlife biologist in the Alaska Game Department, he discovered that the female elk has a recurrent estrus. She has a heat period every nineteen, twenty, twenty-one days. If the animal is not bred when she first comes in heat then she will come in heat again and be capable of being bred at that point. Those studies of the fundamental breeding of the elk are still quoted widely, are still used today in talking about the problem of the management of elk, of whether or not we should be shooting elk in the breeding season. That particular study, yes.

Another study was that of the aging of pronghorns from their dentition. We set up the initial method of aging pronghorns from their teeth. That, of course, has been useful all over and been improved upon since that time. There are other examples we could come up with.

WH: How has the work you’ve done...how has it applied to how the refuges themselves have set up their policies?

PW: I wouldn’t say that my own research has been very directly involved with the refuges, with the waterfowl refuges. I think I had only one student who had a waterfowl problem. But when Craighead was here...John Craighead supervised quite a lot of students working on Canada geese on the Flathead valley. In terms of my own impact on wildlife refuges, I wouldn’t say it was particularly great.

WH: That was my last question.

PW: Okay. Turn it off.

[End of Interview]