Raymond F. Dasmann:

A Life in Conservation Biology

Interviewed and Edited by
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Cover Illustration:

The cover illustration is a painting by Elizabeth Dasmann inspired by a Bushman wall painting from the Nawatugi cave in the Matopos hills of Southern Rhodesia (now Zimbabwe). The original wall painting was done several centuries ago when these animals were hunted by the Bushmen in this area. The Bushmen are now long gone, as are the giraffes and zebras; only the kudu (in the bottom left of the picture) still remain.

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In the middle 1970s the human race is being forced to some critical decisions. We can try to continue with business as usual, to pursue goals of economic growth and material progress without concern for long-term consequences, or we can change direction. If we go on as before we will have at most a few more decades before serious breakdowns of civilization take place. Before that time there will be recurring and increasing catastrophes affecting great numbers of people. These have already begun. However, if we start now to change our course, while we still have relatively abundant supplies of energy and raw materials, we can develop ways of living on this planet that can be sustained, not just for decades but for thousands of years.

The coming years are totally without precedent in human history. Within the lifetimes of those who are still young decisions must be made that will determine whether civilized humanity will have a future. There is no option left to postpone the day of reckoning, or pass today's problems on to posterity. If the wrong direction is taken there may well be no posterity.

—*The Conservation Alternative*

(1975, pp. 1-2)

Foreword

The floors of the old World Conservation Union headquarters at Morges, Switzerland, creaked and the sloping roof window in the third floor, closet-like office where I worked let in both needed air and, when I forgot to close it, also the rain. But it was a friendly place to compose, and that is what I was there to do three decades ago. Outlines for marine conservation, often a bit damp, shuffled to and from the Deputy Director's office, until finally one seemed to offer promise. I was summoned and so was Senior Scientist Ray Dasmann. He was a legend to me, due to my having studied his work on deer at UC Berkeley under Starker Leopold, also Ray's mentor. So, I thought I heard my knees creak in harmony with the stairs as I descended. But there opposite the Deputy Director sat a friendly face, somewhat slumped in a chair. The former spoke at some length, as I recall, then turned to Ray for an opinion. A brief discussion, then simply a nod: Sounds good. Let's do it, he said, launching IUCN's Marine Programme and more, a friendship that lasts to this day.

Insightful, laconic wisdom, I soon learned, was the gift of this different kind of person. I spent many an evening with him and his equally impressive and expressive wife, Beth, talking, always laughing, as we sipped old fashions and nibbled on peanuts, and then had dinner. I always came away with thoughts ringing in my head, but also a bit too much good food and wine to recall all the stories and laughter with precision. The conversations seemed to search for the big things that count. And Ray constantly reminded us of those, and invented more than a few. The International Biological Programme was busy developing modern ecosystem ecology in the 1960s to early 1970s, in the early days of computers and satellite imagery. A portion of the IBP was the conservation of ecosystems program. That program might have stopped right there, and were it not for Ray, the biosphere reserve concept might not have been conceived or flourished.

Those were also the days when protectionist conservation, the setting aside of landscapes and species that people particularly valued, was being recognized as deficient. Ecosystems with humans included became the target. The eventual outcome was the debatable concept of sustainable development. Ray had foreseen this problem well before, leading him to innovate the more lucid, non-political, and universally applicable idea expressed simply by

ecodevelopment. He envisaged human societies as having evolved from locally dependent ecosystem people to urbanized biosphere people. The inevitable result has been that humans have become divorced from their immediate environment, as the footprint of urban centers continues to extend worldwide, and as perceptions of nature have become values derived more from marketing than experience. The impact on conservation has been fundamental, but not always fruitful.

Ray recognized the conflict that emerges when people are divorced from their source, and has expressed it in his writings over five decades. He retains faith in native peoples, and although modern anthropology is showing that humans have always tended to over-exploit their world, the fundamentals of connected ecosystem people, not some technological fix, remain as our best hope for an enlightened and sustainable future. The Easter Island story may be a microcosm of the human future on this Earth, but if we would listen to Ray, this inevitability may yet have a chance to be avoided.

So many eminent persons are credited with inventing new wheels, only to find that their predecessors were the originals. Ray is surely one of those, way ahead, even sometimes too far ahead, of his time. While seeking the big things that count, his perception of the little things has been as significant. Diversity, social or bio-, is a hot topic nowadays, and that is where a lot of little things really count. Ray saw the emerging debate clearly in his 1968 classic, *A Different Kind of County*, my personal favorite, which has profoundly influenced me.

Ray would not like excessive flattery or too many bells and whistles. But in this day of cloning, how wonderful it would be if we could all have a little piece of him placed in our genotype! Almost effortlessly, it seems, he has innovated things that are the envy of so many who have been in his presence at meetings, in the field, or in print. He has thought deeply, but written clearly, about the fundamentals of our relationships with, and dependency on, nature. And, he has acted accordingly.

—G. Carleton Ray, September 2000

Acknowledgments

I gratefully acknowledge Lawrence D. Ford for the enthusiasm and initiative he brought to this oral history project. His hard work, advice, and fundraising efforts helped to bring this volume to fruition. As a former student of Raymond F. Dasmann at UC Santa Cruz, and a conservationist who has followed in his footsteps, Ford has an unusual appreciation of the history of conservation biology and has worked to see that it is documented for future students and researchers.

I am also indebted to David R. Brower, Russell E. Train, Huey Johnson, Joshua Whetzel, Jr., Thomas Lovejoy, Stephen R. Gliessman, and Lawrence D. Ford, who made themselves available for background interviews prior to my discussions with Dasmann and shared their insights with me about his work as a conservation biologist and how his thinking on global conservation has evolved over the last 50 years. Although Dasmann's work is well known among his peers in the United States, I learned that his international reputation has a singularly high profile in global environmental organizations.

The generous donors who made this volume possible include a number of Dasmann's colleagues and friends, and include Joshua Whetzel, Jr., Russell E. Train, UCSC Chancellor M.R.C. Greenwood, UCSC's Environmental Studies Department, the Fred Gellert Family Foundation, Paul Niebanck, Michael and Grace Jacobs, Gerald Bowden, and Lawrence D. Ford.

Ray Dasmann provided the photograph of the painting used for the book's cover. The original hangs on his living room wall and was painted by his late wife, the artist Elizabeth Dasmann, inspired by a Bushman wall painting from Nawatugi cave in the Matopos hills of Southern Rhodesia. Alexey Merz generously provided the frontispiece photograph of Dasmann. Irene Reti, Assistant Editor at the Regional History Project transcribed the tape-recordings, helped me a great deal in gathering and tracking down research materials and in designing this volume, all with impeccable attention to detail and accuracy.

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Introduction

The Regional History Project conducted a dozen interviews with Raymond F. Dasmann, UCSC Professor of Environmental Studies Emeritus, during the spring of 1999 as part of its University History series.

Professor Dasmann is an internationally renowned conservation biologist who over the last fifty years has made singular contributions to modern conservation science by defining and refining many of the concepts which are the intellectual scaffolding of modern ecology and environmentalism. He began his career with his groundbreaking work as a field biologist, studying deer populations in California, and later, African wild game. Later, at the Conservation Foundation, in his pioneering work with UNESCO when he inaugurated its Man and the Biosphere Program, at the 1972 Stockholm Conference on the Human Environment, and at the World Conservation Union, Dasmann's singular thinking and writing have influenced ecologists, conservation biologists, and governments throughout the world, as they have wrestled with the dilemmas posed by economic development and its effects on the environment. Dasmann's encompassing concept of ecodevelopment and its practices, and his inclusion of indigenous peoples (and human beings) as integral to the ecological equation are two of his major contributions to contemporary environmental understanding.

Dasmann was born in San Francisco, California, May 27, 1919, where he attended Lowell High School, and later San Francisco State College. He served in the U.S. Army during World War II in New Guinea and Australia, where he met his wife, Elizabeth Sheldon. After the war they settled in San Francisco, and in 1948 Dasmann completed his undergraduate education at UC Berkeley. He continued at Berkeley where he worked closely with A. Starker Leopold, the son of the renowned ecologist Aldo Leopold, earned his master's degree in 1951 and his Ph.D. in 1954 in zoology. Both his master's and doctoral research focused on studies of deer populations in northern California, field studies which were characterized by his groundbreaking ecological approach.

His early academic career included a year at the University of Minnesota during 1953-54, and at Humboldt State University during two periods from 1954 to 1965, where he taught range ecology and range management, and during his

tenure as chairman of the Division of Natural Resources, was responsible for forestry, fisheries, range, wildlife, oceanography, and natural resources curricula. In 1959 Dasmann was a Fulbright Field Biologist in Southern Rhodesia (now Zimbabwe) where he did field work on African wild animals and published *African Game Ranching* (1963), a seminal work in addressing the threatened wildlife population and how the traditions of the indigenous people there could be utilized to solve this problem.

His work in Southern Rhodesia led to his appointment as Director of International Programs at the Conservation Foundation in Washington, D.C., the most prestigious environmental think tank in the country, from 1966 to 1970, when he began to think about conservation on a global scale.

From 1966 to 1970 he was Senior Ecologist for the International Union for the Conservation of Nature (IUCN), also known as the World Conservation Union, in Morges, Switzerland, founded in 1948, when it was virtually the only world conservation organization concerned with nature protection. He continued as a consultant to UNESCO where he inaugurated the Man and the Biosphere Program; and participated in the 1972 Stockholm Conference on the Human Environment, a watershed international environmental meeting.

From 1966 to 1976 Dasmann was involved at the Conservation Foundation with environmental planning and development in south Florida. He continued as a consultant to United Nations agencies, and worked with the UN's FAO on the development of case histories of international development as it influenced the environment. He also participated in numerous international conferences on the environment which included travel and consultation in Europe, Africa, Australia, New Zealand, Oceania, the Caribbean, North America, and Southern Asia where he was involved with the development of marine programs, the South Pacific program, and overseeing activities concerned with national parks and protected areas.

Dasmann's work with the World Conservation Union, initiating global conservation programs and the Man and the Biosphere Program, earned him high honors from a number of conservation and scientific organizations: in 1979 he received the [Aldo] Leopold Medal and Award from the Wildlife Society; the Browning Medal for Conserving the Environment from the Smithsonian Institution in 1974; and the Officer of the Order of the Golden Ark award from

the government of the Netherlands in 1978.

He has published over a hundred scientific articles and books, which include *The Last Horizon* (1963), *The Destruction of California* (1964), *Planet in Peril* (1971), *The Conservation Alternative* (1973) and his classic textbook, *Environmental Conservation* (fifth edition, 1984), all of which have had a lasting influence in modern conservation thinking and global policy-making.

Dasmann left the IUCN in 1977 and accepted an appointment at the University of California, Santa Cruz, as a Professor of Environmental Studies. During his tenure at UCSC he promoted the interdisciplinary nature of ecology and environmental studies and inspired a generation of students who have gone on to become agents of change as ecologists, field biologists, and environmental activists. In his narrative he describes the emerging field of conservation biology, the evolution of the environmental studies department, and the colleagues with whom he worked over the years. He retired from the University in 1989.

When Dasmann returned to California he continued his involvement with an array of environmental organizations. He served as a member on the board of the directors of Friends of the Earth; and was on the advisory council of Earth Island Institute. From 1977 on, he continued as a consultant to the World Conservation Union, focusing on ecodevelopment and environmental planning in the South Pacific. In 1987 he was a co-founder of the Central California Coast Biosphere Reserve (which in 1995 was renamed the Golden Gate Biosphere Reserve) and is still very involved in this prototype biosphere region.

Copies of this volume are on deposit in the Bancroft Library at UC Berkeley; and in Special Collections, McHenry Library, University of California, Santa Cruz.

—Randall Jarrell, September 23, 2000

Santa Cruz, California

Early Family Life

Jarrell: To start, when and where were you born?

Dasmann: I was born in San Francisco, 1919. We lived in San Francisco just across from Mission Park. Then when I was about six years old we moved over to Fell Street, near Fillmore, so you could say I lived in the Fillmore. It is a long story, how we got from there to there. But my father died before I was born, in 1919, that big flu epidemic that killed so many.

Jarrell: Yes, the influenza. The Spanish flu, they called it. So you never knew your father.

Dasmann: No. I had my mother and Aunt Peg who was a sort of substitute father, you might say. I was very close to both of them growing up.

Jarrell: How many siblings did you have?

Dasmann: Two older brothers. Bill was twelve years older than I, and Bob, seven years older.

Jarrell: What did your father do?

Dasmann: Well that's another long story, but before he died he was a policeman in San Francisco, in Chinatown.

Jarrell: What's the origin of the name Dasmann?

Dasmann: German. My father was born in San Francisco of parents who came from Germany to San Francisco. So he was a native son, you might say. My mother was from Ireland, in Tipperary. She was born in 1880 and came around the turn of the century to San Francisco. My mother never talked about anything to do with her family background. So I really know very little about what was going on. In trying to write my own autobiography I run into this blank wall of just not knowing anything about what was going on or why. It was a terrible shock to her, obviously, when my father died.

Jarrell: It must have been devastating. She was pregnant with you when your father died. How did your family survive? Who put the bread on the table?

Dasmann: After my father died there was no contact at all with the German side

of the family. So I grew up Irish. My maternal Irish grandfather was a farmer in Ireland and his goal was to come to America and have a farm. He finally had one in Sonoma. When he died, when I was about five, he left the farm and there was some other inheritance involved which made it possible for my mother to buy an old pre-earthquake house, which was at that time three or four storeys of flats, which were converted by my uncle and my oldest brother into apartments. So my mother was an apartment owner and manager.

Jarrell: And she could live off the rents?

Dasmann: That was what she had to live on, yes. Plus any insurance or I don't know what else. It was a tight squeeze for her, I know. She did most of the work herself, running up and down the stairs. There was no elevator.

Jarrell: In various introductions and little bits and pieces that I've cobbled together from your books, you said that when you were a boy you read Ernest Thompson Seton and Jack London, and so you were in a family that read.

Dasmann: Definitely. I used to beat it down to the public library all the time and bring back books that my mother and I would like. My mother read a whole lot of books. She was quite a reader.

Jarrell: You said, "I was already inclined towards a desire for wildlife, ever since I was first exposed to wild country at the age of six or seven in the back hills of Monterey County and the southern end of the Sierra and the Walker Basin country." Whom did you go on these trips with? Tell me about them.

Dasmann: Well, on top of everything else, my brother Bob had asthma and my mother was involved in a constant search for a climate that would enable him to get by with his asthma. He was bothered by the San Francisco climate, by the fog and such. She tried various places; we moved to Los Gatos for awhile. Then she found a place for Bob to stay down in Banning, down in the desert country. But then while we were in Los Gatos we met somebody who had worked on a ranch in southern Monterey County. We went down there and that's where I first encountered really wild country. Bob then went to school down there and boarded with the people who owned the ranch. It was in Lockwood, that was the nearest town, if you want to call it a town. It's still there. Just a post office.

Jarrell: How did you get there?

Dasmann: By train. People would meet us at the station in an old Model-T Ford.

Before that we used to go to my grandfather's farm in Sonoma. It's probably part of the town now. I've never been able to locate it. It's now part of Sonoma, I think. But at the time it was out a ways from downtown Sonoma.

Jarrell: And when would you go there?

Dasmann: I was there whenever I was taken there by my mother. I was there fairly often. I was very impressed by this farming country. It wasn't wild country. But at least it was a lot of space to wander around in. It was very rural. I used to spend a lot of time watching barn swallows going back and forth to the barn and nests. Anything wild interested me. When I'd get down to Monterey County there'd be coyotes calling just outside the window and deer, quail, rabbits, and squirrels. It was wonderful. It was paradise for me.

Jarrell: Where did you go to high school?

Dasmann: Lowell.

Jarrell: What was that like in those days?

Dasmann: Oh it was all right. I hated it; I just hated high school. But I liked athletics. So the only thing I did at Lowell was athletics. I was on the track team and I played soccer and tennis, but I was not interested in my studies at all. When they finally let me out and graduated me in 1937 they said I shouldn't think about going to college that I should just find myself a good job.

Jarrell: What did you do when you got out of high school?

Dasmann: I went to San Francisco State University. I got straight A's in the first year. (laughter) That made me mad, you know, when they said I should forget about going to college. I started at San Francisco State. My brother Bob was in the Forest Service by then, based up at Susanville. He said they had a great program at Lassen Junior College, which was one of these National Youth Authority programs during the New Deal. They paid all your college expenses and gave you a little money besides, and paid for your dormitory lodgings. And taught me forestry. So I went there for a year. Then I went back to San Francisco State. So I put in three years there and one year at Lassen.

I was almost ready to graduate when I quit and joined the army in 1941 after Pearl Harbor. I rushed to get in. I tried the marines first and they said they couldn't have anyone who wore glasses. I went to the navy and they said no, sorry. Then I went to the army and they said come on in. (laughter) Big mistake

in a way. But there I was.

I enlisted. I went to the Presidio at Monterey first, where I was inducted. For basic training some of us were moved out to Camp Roberts just a short distance from the ranch down there where I had stayed. I did my basic training in combat intelligence at Camp Roberts. After thirteen weeks of basic training I got moved up to Fort Ord, where we were to be assigned to our permanent positions. They just sort of scooped us up regardless of training and put us all in the 32nd Infantry Division going overseas. So we had a couple of weeks at Fort Ord and then took a night train to Fort Mason in San Francisco and got on a boat, with nobody telling us anything about anything.

Jarrell: You didn't know where you were going?

Dasmann: No, we hadn't a clue. Well, the officers probably did, but I was an enlisted man. But it finally dawned on us when we hit the deep blue that we were going a long ways, we weren't just going up the coast. Then when we crossed the equator we realized we weren't going directly to Japan. Then somebody found some coins left over by the previous inhabitants of our spaces on the ship and realized we were going to Australia.

The war was at a critical stage. The Australian army, the professionals, the imperials, had virtually all been sent to the Middle East, in a desert war in North Africa. Australia had nothing but the militia, the equivalent of the National Guard, to protect itself. The Japanese were coming straight down, bombing Australia. Everyone was expecting them to be landing on the North Coast. And we were supposed to hold the line in the desert at Alice Springs.

We went through some desert warfare training, but not very much. Then all of a sudden the whole picture shifted and we were moved over to Brisbane, in Queensland, to hold what they called the Brisbane Line. They figured they couldn't hold the northern part of Australia; they just didn't have the troops. We were the troops. But they did figure on holding the line at Brisbane. So we used to practice there and go out and do defensive maneuvers on the islands off the coast and on the shoreline, too.

Meanwhile a whole lot of things were happening in New Guinea. The Japanese had captured the Dutch part of New Guinea and were moving down towards the Australian part of New Guinea. So all of a sudden we were moved up there to stop them, which we did. We knew nothing about war; we didn't know anything

about anything. We were up against the Japanese imperial marines, the crack troops. So I was told long after the event.

Jarrell: So you went from Australia to New Guinea. Then how did you meet your wife?

Marriage

Dasmann: Well that's another long story. After the first big battle at New Guinea when we took the Japanese-occupied area at Buna, a village on the coast, there was an enormous battle. We lost a good share of our people. We went back to Australia after we won that battle for recuperation and rest and I met a guy who was shortly to be given leave. He was going to Sydney and I said I'd go with him; I'd got leave at the same time. He knew an Australian girl from his stay at a rest camp south of Brisbane. They arranged a double date for us and I went along and my [future] wife arrived. She blew me away, you might say. I latched on to her and stayed with her as long as I could during that leave. But then I had to go back to the damn war. By then I had lost all interest in the war and all I was interested in was getting married.

Jarrell: So you met her when you were on leave and then you had to go back?

Dasmann: Yes, a whole series of miraculous events were involved. My friend back at the army base near Brisbane decided he didn't want his furlough and I could have it, because he had a girlfriend. So I went back. I met her in May and then in September I got to go back on his furlough time. We became engaged and agreed to get married at the first opportunity. But I had to get permission from the army and the Red Cross and everybody to get married. You couldn't just go and give someone American citizenship without making sure they were of worthy character. So I managed to short-circuit a lot of that by going directly to the commanding general of the 32nd Infantry Division and getting his permission to get married.

After I came back from the furlough on my friend's time I was back to New Guinea again and my main concern was staying alive. But then another leave was granted me to go and get married. We were way up in New Guinea by then. Headquarters had shifted around. But I got this leave to go and get married. I went back to Sydney, three to four weeks there, I guess. It was great. But then I

had to go back to the damn war again. It was an unbearable situation. The last time I'd have to go down every morning down to see if the ship was ready and we would leave and then they would say oh no sorry, go back, come back tomorrow morning. Every morning I'd get up and say goodbye to her and come back two or three hours later. That went on for more than a week. Finally they loaded us on a ship and sent us back to New Guinea. But meanwhile I was married. Legal rights and all. I felt like I'd known her in another life.

Jarrell: In one of your books you wrote that she really deserved co-authorship but she refrained from that. It seems that she was such an intellectual partner.

Dasmann: I wouldn't have done anything if she hadn't been there saying get going! I was ready to just drift. I was actually planning when the war ended just staying over in India or China or wherever we were and wandering on, seeing the world. I had no goal in mind until she arrived and all of a sudden a goal . . .

Jarrell: So she changed your life?

Dasmann: Totally.

Jarrell: What kind of a person was she?

Dasmann: She was an artist, primarily. That's what she did from the time she was a small child. She was into painting in particular, but anything in art. I had the goal, you know, when we got to the States, of pushing her into artwork so she'd be the main thing that was happening in our lives. But she had the goal of pushing me into forestry. She won.

Jarrell: So you were kind of a dreamy fellow?

Dasmann: You might say so.

Jarrell: A wayfarer. A traveler. Before you met her you were just planning to kind of drift?

Dasmann: I didn't expect to be alive very long, but when I met her then it became very important to stay alive, which hadn't concerned me as much before then. But a friend said they'd had a good soldier in me before I went on leave, and that I never came back after I met Elizabeth.

We had very little contact at the time because you know everything you wrote was censored and it took it ages for a letter to get back to Australia. So I didn't know quite what was going on with her. But I'd managed to accumulate enough

points to be sent back to the States to rotate. They started a rotation system getting people back to the States who had been overseas and in combat for a long time. So I got the points and I was able to get back to the States. I was hoping and expecting that she might be back in the States. But she wasn't. She hadn't been able to get a ship yet. But finally her turn came up. She got on the war bride ship and came to San Francisco.

The war was still on and we worried about Japanese submarines. It was a very tense period in my life, and hers as well. But we finally got together again. I should say that when I got the leave to get married, we were way up in New Guinea and the leave papers said that we had to find our own way back. There was no transportation available to go back to Sydney. So the other group that was given leave at that time was the 32nd Infantry Division band. They had never had leave before. So I went with the 32nd Infantry Division Band. We had to hitchhike our way to Australia.

Jarrell: How did you hitchhike?

Dasmann: Well, we managed to get a plane that was going from where the war was going on, where we were, to the interior of New Guinea, and flew over the mountains then and landed there. Then managed to hitchhike on trucks that were going down to the port of Lae, which is down a ways from where the fighting was going on. And there we managed to talk our way onto a Dutch ship that was going to Milne Bay at the tail end of New Guinea, which was the big base for the military and from Milne Bay we got on a ship to Sydney.

Jarrell: Tell me about the lieutenant.

Dasmann: He was in the medical corps. He had leave to go to Sydney and get married and I did, too. So we formed an unofficial detachment, 32nd Infantry detachment and he was in charge and I was first sergeant. So we put ourselves on a ship and got all the way to Sydney that way. It was quite an event. At any rate, at Milne Bay we had to wait for quite a long time to get a ship. We entertained the fresh troops coming from the States with the band music and I was in charge of the band, knowing nothing about music.

Jarrell: In light of your later career, what was New Guinea like?

Dasmann: Beautiful along the coast. Of course it was untouched rain forest, which just intrigued me enormously. But nobody knew anything about it. I

didn't. I didn't know how to tell one tree from the other. I gradually picked up a little knowledge about the trees and vegetation and the animal life.

Jarrell: Did you encounter the indigenous people, too?

Dasmann: Yes. There was no communication with them because they didn't speak anything except their own languages. New Guinean natives have something like seven hundred different languages. But they were friendly. They did a lot of work for us; they were moved out or they moved themselves out to get away from the fighting.

Jarrell: So eventually Elizabeth got on the bride's ship and got to San Francisco? And where were you?

Dasmann: I was in Denver at the time. I managed to get leave and come to San Francisco and meet her. Actually my mother and aunt cooked up a completely phony story about what a desperate situation this was and managed to get the Red Cross to arrange an emergency leave for me from Denver to San Francisco. I had been changed over to the army air corps at the time and they kept threatening to send me back overseas again. This happened to most people. But I had malaria and it came in handy because I'd develop a high fever and chills, 105 degree fever. So they didn't send me away.

Jarrell: So when did you leave the army air force and begin civilian life anew?

Dasmann: After Hiroshima; after the atom bomb. The Japanese signed a peace treaty and the war was over. Then I had to struggle to get out of the army. But they let me go eventually, and I came back to San Francisco. Originally I would have preferred to stay in Australia. I liked it there so well. But my wife said my chances of getting ahead in the universities there were practically nil, that they would zero in on me just to prove that a Yank's education was no damn good, that I wouldn't get credit for my three and a half years of university; that they'd insist that I start all over again. She thought there would be this prejudice against me all the way through. So we'd be much better off if we both went to the States. She was right, I know it now.

Jarrell: Once you were settled in San Francisco—you'd had three and a half years of college, you'd been in forestry at Susanville. And then what? Tell me about going back to school.

Dasmann: I went to UC Berkeley initially as a forestry student but then A.

Starker Leopold arrived at Berkeley and was opening a new program in wildlife management in the zoology department where I was in his first class. I switched from forestry which I could see was getting too much concerned with board feet and little to do with anything else, to wildlife management. UC gave me credit for all the San Francisco State courses I'd taken but only partial credit for those at Lassen. So that year I had to make up. It took me a couple of years to get a bachelor's degree.

A. Starker Leopold

Jarrell: Tell me about Leopold.

Dasmann: He was born in Wisconsin, the son of Aldo Leopold, one of five children. He had worked for awhile in Missouri, and I think he did his doctorate thesis there on the wild turkey. He had worked for awhile doing a study of wildlife in Mexico and wrote a big fat book on that. Then he had come to UC Berkeley. He hadn't finished his work on the wildlife of Mexico at the time he came to Berkeley to occupy a position in the zoology department. He was the son who took after Aldo the most, in the sense of being fascinated by wildlife, interested in that.

Jarrell: What was your impression of him?

Dasmann: When I heard that he was there I went to see him about signing up for this program and I just hit it off with him immediately. We got along very well. I did well in all of his classes. When I graduated he offered me an opportunity to do a deer study and at the same time do a master's degree. So I was paid to do my master's degree work.

Statewide Deer Survey

Dasmann: He was getting funding from the California Department of Fish and Game to do a survey in California to see the extent of the deer population and to get some idea of how abundant they were and how they were changing or affecting their habitat. The survey was brought on because there were constant complaints about deer damage to agriculture from farmers and gardeners, and because of the constant complaints from hunters that there weren't enough deer. So there was a lot of pressure on the Department of Fish and Game and they

shifted it to the University so they could say this was an unbiased university study.

We did a survey of the deer range in California that was eventually published. At the same time there was an intensive study of deer in the Sierra Nevada north of Yosemite, that studied the migratory habits and the natural history of deer in that area.

Jarrell: What was the purpose of the deer study?

Dasmann: Well there were two parts to it. The part I did was the statewide survey, which was the Department of Fish and Game contract with the University, with Starker Leopold in charge of the project. The total project was divided into two halves; one was a statewide survey, and the other was an intensive study of a migratory deer herd at Jawbone Ridge just north of Yosemite. Two people were assigned to the Jawbone study and two of us to the statewide survey.

Jarrell: So it was the biology of a migrant deer herd?

Dasmann: That was the intensive study. I wasn't involved with that. Thane Riney did the main study. The statewide survey was done by Bill [William M.] Longhurst and me. But when that ended another contract came through with Harold [H.] Biswell in the forestry department to study the effects of controlled burning of chaparral on the resident, non-migratory deer population. That's what I worked on after the statewide survey. The statewide survey gave me my master's degree and the intensive study up in Lake County did my doctoral degree for me.

Jarrell: What were you trying to learn? Was it an inventory, a population survey?

Dasmann: It was the population dynamics of a deer population in chaparral, which was the main emphasis. What happened when the chaparral became old, mature brush? It was low in nutritive value, as compared to the freshly sprouting chaparral after a burn, which was very good for deer. It was an attempt to reach a balance between the two, where you could through controlled burning create an ideal habitat for deer and related species. To put that all together we had to study the deer intensively. It involved a lot of handling of them and following them around in their movements. I tended to stay in one small area, focusing on

those deer and [Richard D.] Taber whom I was working with, did a broader study of the whole area around, where I was in the middle of it, you might say.

Jarrell: What kind of a population were you talking about?

Dasmann: The one I was studying was about eighty deer, I can't remember precisely, that were resident in the area that I was concerned with and then there were more deer on the periphery, the ones that Dick Taber was looking at, and trying to follow. So we got some idea of how far the deer traveled: did they really stay in their home ranges or did they move out periodically? What went on with them? What was their productivity? Did they produce a lot of fawns and did the fawns grow to maturity? It was a long study. When the statewide survey ended I went on to this in 1950 and I was with it for five years, until 1955. Dick Taber was there even longer. He started in 1949, I think, and went on. I forget when he ended his part of it. It must have been about '56.

Jarrell: Prior to this series of studies, had there been any kind of prototypes or other works like this?

Dasmann: Not quite like it, no. But there have been other studies.

Jarrell: It sounds very ecological.

Dasmann: It is ecological, very much so. Trying to get the whole picture of nutrition and everything else.

Jarrell: Was that a departure in terms of those kinds of studies? To take the whole habitat, the chaparral, to take all of that into consideration.

Dasmann: I think it was unusual at least; it led to a change in management practices on the part of the Department of Fish and Game.

Jarrell: How?

Dasmann: For one thing, it took the issue of how to control these deer populations when they surge up after a fire and then die off; how to even that out a bit so that you have a relatively stable population.

Jarrell: What was the cycle like? How many years?

Dasmann: It took about five years, maybe a little longer, but say five years from the time of fire burning to the time when the nutritive value of the food began to fall off. During that time the deer population would increase from say, twenty per square mile in the old brush to even a hundred or two hundred per square

mile in the freshly sprouting stuff. So then they would all disappear as the brush got older, and back to the original level. But by managing that chaparral, by creating a diversified habitat you could maintain a stable population of say 70 per square mile. In our statewide survey, we discovered there certainly wasn't any shortage of deer at that time. There was an overabundance doing considerable damage and I recommended that the hunting practices change.

After I had my master's degree, I had to decide whether to work for an agency and get out in the field immediately or to tighten the belt and go for a doctorate. But then Leopold came through again with another possibility—Harold Biswell needed a person to do an intensive deer study in Lake County. He was in forestry. He was the one who did all the work on the effect of fire on forests.

For my doctoral dissertation I did an intensive study of one deer population in Lake County. Dick Taber and I worked together on this whole thing. He was getting his doctorate, too.

Carl O. Sauer

Jarrell: You mentioned when we first met that when you went to Berkeley that originally you perhaps wanted to go into geography. You were talking about Carl [O.] Sauer and several others. What was it that drew you in that direction?

Dasmann: I had graduated in zoology when I heard by the student grapevine that Carl Sauer was teaching a really great course on conservation of natural resources in the geography department, and that I should at least sit in on a lecture and see what it was like. Well, I was so impressed by him I took the whole conservation course which gave me the opportunity to pull together all these different disciplines into an understanding of what was going on in the world. He was an incredible person. His ability was amazing and his lecturing was quite amusing. He would just wander around the classroom talking, not a note, not anything. Just off the top of his head, everything from Mayan culture to England, to the Incans to the North American area of Native Americans and on through the history of land use and settlement and erosion and forest loss. He just tied it all together neatly. So when I finally got a job in Minnesota one of the first courses I taught was conservation of natural resources and I just pulled out my notes from Sauer's class (laughter) and there it was!

Early Environmentalists

Jarrell: When you started at Berkeley, in graduate school, what was the state of environmental thinking in those years? Who were the thinkers who impressed you?

Dasmann: Let's start with Aldo Leopold, whose *Sand Country Almanac* came out about the same time I graduated and had a strong effect upon me. I agreed with him totally. He also contributed his broader view away from just focusing on one species, deer, which I was working on, and looking at the whole environment.

Jarrell: So he was an ecological, synthetic thinker.

Dasmann: He was, definitely. I've mentioned Carl Sauer, whose ability to tie things together from ancient history up to the future was quite remarkable.

Another book that came out was Bill [William] Vogt's *Road to Survival*, about the future human population crisis. He didn't say it was immediate but he certainly scared the wits out of officials and caused them to go to great lengths to refute his information.

Jarrell: And this was right after the war, many years before Paul [R.] Ehrlich.

Dasmann: Yes. Ehrlich was kind of late in the game.

Jarrell: Many people think it all just started with *The Population Bomb.*

Dasmann: With *The Population Bomb* or with Rachel Carson.

Jarrell: Exactly. But I see there's a whole tradition that's not as high profile.

Dasmann: That's right. I can mention some others, such as Ed[ward H.] Graham. His books on wildlife and soils and such, impressed me enormously in getting this broader view which was very important to me. I could have just focused on the deer population and its ups and downs, which I had to do anyway. But these other influences were working on me all the time. So I was concerned with more than just what the deer were eating today. I was interested in that. I wasn't necessarily involved to any great extent, but was thinking and writing about it eventually.

There are so many others. Lewis Mumford had a tremendous effect on me. I became aware of him somewhere back in the late '40s, after the war. Later I had the opportunity to meet him at a couple of meetings that were held by the

Conservation Foundation. Then I interviewed him for a program we were doing for National Public Radio. It meant a great deal at the time. So I didn't know him personally very well but I had long talks with him.

Jarrell: This would have been about what year, roughly?

Dasmann: Well now I'm jumping over, a big jump there. I was interviewing Lewis Mumford in 1965, when I was at the conference with him, again somewhere in the 1960s. But you see the books were what influenced me far more than just the conversation.

Jarrell: He had such a wide range.

Dasmann: He really did. Just amazing. All these people were there and they were writing and they were hopefully influencing public opinion. But somehow they'd get forgotten and you'd just hear of the stars, the celebrities that had the bestsellers. I don't want to take anything away from Ehrlich or Rachel Carson, for heaven's sake, because they brought awareness to people that wasn't there before. But of course things were getting worse, and they've continued to get worse. There's more to be aware of.

Jarrell: When you finished your doctorate in 1954 did you have any sense of how you wanted to proceed? You said you ended up teaching at the University of Minnesota because there were no jobs out here. But just aside from getting a job, what was your sense of what you wanted to do at that point?

Dasmann: What I wanted to do was more field research with wild animals. I was fascinated by the problems of keeping wildlife, natural diversity, on the scene. That was a goal. If I said I had a goal, it would suggest I had a single purpose, that I was aiming at something and trying to get there at any cost. That wasn't the case; I was here and there and elsewhere. I was doing what came up. I wasn't a crusader.

Jarrell: You liked being out in the field. You liked that work.

Dasmann: Definitely. I was able at Minnesota for example, to get out and get acquainted with the Eastern forests, and that was a whole new thing for me. Then I taught field courses where we'd go out and identify plants and see what was going on in the environment, and that was opening things up for me a lot. After a year I went back to Humboldt from Minnesota.

Humboldt State University

Jarrell: How did you end up at Alexander von Humboldt State University?

Dasmann: Well there's another forerunner. Humboldt influenced me a lot.

Jarrell: How?

Dasmann: His vision and his way of putting things together; he was ecologically way out ahead of his time, maybe a century ahead.

Jarrell: I think it's pretty amazing they named that school up in the redwoods after him. A nice act of imagination.

Dasmann: Yes. Because he was never there. He certainly didn't even visit the redwood forest as far as I know. But still the Humboldt Sink in Nevada, the Humboldt River in Nevada that flows nowhere. But his name was very prominent in American thinking at the time.

Jarrell: How did you end up being appointed at Humboldt? And you spent, what, ten years there?

Dasmann: Yes, in two pieces, at two different times. At one point I retired and went to Africa. I had to get my retirement money out of the state in order to go to Africa.

Jarrell: So that's when you went to Southern Rhodesia. So how did you end up at Humboldt, the first time?

Dasmann: When I was at Minnesota I learned there was a job opening at Humboldt. And anything to get out of Minnesota before I froze to death. The job was involved with wildlife, so I put in my application in 1954 and got it.

Jarrell: Humboldt State is in Arcata, a pretty provincial part of California, rural, far from San Francisco. What kind of a community was it? What kind of students were you working with? Give me a taste of what it was like.

Dasmann: It was totally different from what it is now. It is a hippie capital of the world now. Back then it was loggers and lumberjacks. If you spoke up against the lumber industries you were in trouble. Some of us were in trouble. There was a division between the forestry branch and the wildlife and fisheries group, who were always in opposition. I was at first a professor of wildlife management.

Jarrell: So there was a schism between the wildlife people and the forestry

people, and to what extent were those academics in the forestry department involved with the lumber industry?

Dasmann: When everything you do and say is being watched by representatives of the industry, and they put up money for this and that, your thinking is influenced, clearly. At that time there wasn't the knowledge of what was really going on. I mean, obviously the clearcutting was happening and that was devastating and it shocked people when they saw it. The timber industry had arguments about how this was the right way to go and that the only way to regenerate redwoods was to clearcut and get a new stand going.

Jarrell: You were more into the fauna?

Dasmann: Yes. I was trying to study elk. But I got very interested in plant ecology at the time and a lot of my ecology classes went out on the Samoa Dunes, the sandspit dunes, to do studies of the plant succession on the dunes. I had the advantage of being very field-oriented in the whole program, everyone took the students out into the field to teach, much more than we did in the classrooms. So it was quite an interesting place to be at that time. Now at UC Berkeley, where I taught for one year after coming back from Africa, there was classroom teaching which didn't include much field work. For field work you had Strawberry Canyon and that was about it. Whereas at Humboldt you had forests, sand dunes, the whole spectrum.

Jarrell: What was the purpose of the program at Humboldt? You were giving a bachelor's degree in wildlife management. Was it assumed that those students would go work as civil servants for the state?

Dasmann: Yes. Definitely.

Jarrell: It was a very applied approach?

Dasmann: Yes. It was oriented toward the California Department of Fish and Game and the U.S. Forest Service and the Fish and Wildlife Service—that group of agencies. Much less toward the National Park Service, which was preservationist. It was the sustainable yield, sustainable use aspect, that was very important.

Jarrell: Which had come about under Gifford Pinchot. The sustained yield concept informed forestry practices.

Dasmann: Yes, definitely.

Jarrell: Explain then about your saying that at Humboldt State the curriculum and the training of the students was not focused towards the national parks. So what does that exactly mean? They were more preservationist?

Dasmann: Well, just that the whole tradition in wildlife management started by Aldo Leopold, with his game management book which became the textbook at the time, was geared toward sustainable use of wildlife through hunting and fishing.

Jarrell: He started out as a hunter.

Dasmann: He was a very enthusiastic hunter. And so was Starker, who would cancel classes at the start of the hunting or fishing season. (laughter)

Jarrell: Aldo Leopold was one of the founders of the Wildlife Society. The original impetus for that was for hunting and gamesmen and fishing.

Dasmann: Yes. Hunting and fishing were the big things in relation to wildlife. I was kind of a disgrace because I didn't hunt or fish. I don't know how I ever survived in that field. I did hunt a bit when I was doing my deer research because I guess I would have been kicked out of Lake County if I hadn't, but that was for the table, deer meat, and also just getting acquainted with that whole aspect of what was happening with the deer population.

The total population of Humboldt State College at the time I came there was, I think about 600. We had two people in forestry, two people in wildlife management, and two people in fisheries. We had lots of students; we had more students probably than anywhere else at the time in the field of wildlife management. So there wasn't any problem there. If anything it was a problem of overwork, but we kept adding people on. The person in charge of wildlife at the time was Charles F. Yocom who was primarily interested in waterfowl and did his research on Canada geese. I was on the terrestrial side and he was more on the marshy, wetland side of things. But once we began adding people that changed. We had quite a fair number eventually. Now there're a lot of faculty up there.

Jarrell: The whole scene has changed. And what research were you doing at this time?

Dasmann: Well I was particularly fascinated by plant ecology. I put a lot of time in on studying the dunes and plant succession.

Jarrell: You said you were at Humboldt State for about five years. How did you end up going to Africa?

Southern RhodesiaDasmann: Well to understand that you have to go back to the deer study days, when I was working on this overall project, which had two halves, a statewide survey and then an intensive study of a deer population in an area north of Yosemite—the Jawbone deer herd, it was called. Thane Riney was the principal investigator in that Jawbone deer herd study. He and I were both disciples, you might say, of Frank Fraser Darling, whose *Herd of Red Deer* influenced both of us enormously. He was doing an intensive study in the Sierra and I was doing the statewide survey. When he finished that work he went to New Zealand, where they had a lot of deer problems and they wanted someone to come and study their deer situation. So he was there for awhile. Then he heard about a project in Rhodesia. He managed to get a Fulbright scholarship to go to Rhodesia and work with the national museum there. Then they opened it up so that there were three positions open for Fulbrights. He thought of me and of a fellow student, Archie [S.] Mossman. So Archie and I went over to join Thane in Rhodesia on Fulbright grants for two years

Jarrell: Did you take Elizabeth and the kids?

Dasmann: Yes. For a long time we were thinking we were just going to stay there. But then trouble broke out. Riots and revolution. It began to seem like an unhealthy place to stay. So about the time my thinking was changing about staying in Africa, Starker Leopold wrote and said, hey, how would you like to teach at Berkeley? Take my place for a year and then there might be something opening up at UC Davis. So we came back and moved to Berkeley.

Jarrell: Let's move back. I want you to talk about *African Game Ranching*. It's a wonderful little book. I learned so much reading it that I was totally ignorant of. But, what was the experience like for you entering this exotic, completely different world?

Dasmann: It was an incredibly beautiful experience. To suddenly find yourself there in the national park with the elephants and the buffalo, the zebras and the giraffes. Everything under the sun all around you.

Jarrell: Like Eden!

Dasmann: Yes. And you learn to adapt. Don't pet the leopard and don't say, here kitty cat to the lions. And watch out for the elephant. Make sure they're in a good mood before you get too close. It was just a whole new thing.

Jarrell: Give me a thumbnail sketch of Archie Mossman.

Dasmann: He was originally from Wisconsin. His father was on the faculty at the university there. He came to Berkeley where he was a graduate student working with Starker Leopold, also. But his emphasis was on rabbits at the time, as I recall, following rabbit studies. After he finished his Ph.D. work he joined the faculty at the University of Wyoming. After that he went to Africa, and later I was able to get him to join the faculty at Humboldt. He went to Humboldt after I went back to Humboldt.

Jarrell: When you went to Southern Rhodesia, to the national museum, what was the problem you were working on?

Dasmann: Well, after we arrived we realized that the main problem was that they were trying to clear the wildlife out of areas so they could bring cattle in. They would have massive shoot-outs to get rid of the game. Then they'd bring in their cattle and make money from them. What a number of people had noticed was that they were selling the most valuable resource in favor of a less valuable resource. There was no economic justification for what they were doing. So we went there with the hope, then, of being able to follow up on the work of Frank Fraser Darling along with a Swedish ecologist and a British ecologist who had done studies in Africa, and had pointed out the potential of harvesting, that was where our emphasis was.

Frank Fraser Darling

Jarrell: Tell me about Frank Fraser Darling and how he fits into this equation.

Dasmann: He was, I think, the top British ecologist at the time. He had done not just the work on the red deer but he had done a sociological, ecological study of human populations in the Scottish highlands and wrote a book on the highlands and their culture. But he also went to Africa and looked over the scene there and came to the conclusion that everywhere there was an effort to get rid of the wildlife to bring in cattle.

Jarrell: Had he been invited by the government there?

Dasmann: He had been invited by an international organization, I think probably the International Union for the Conservation of Nature [IUCN].[1] I don't know who his sponsor was at the time. But he had been invited to take a look at the situation and say what he thought should be done about it.

Jarrell: You said in your forward to *Environmental Conservation*: "I owe him," Frank Fraser Darling, "an important karmic debt."

Dasmann: That's a good question. What did I mean by that? Just that he influenced me. He really was responsible for getting me into this whole field of international conservation, wildlife-oriented and natural-area oriented studies and work. I wouldn't have gone to Switzerland to work with the IUCN if he hadn't brought me in, essentially.

Jarrell: When did you actually first meet him?

Dasmann: In the Lake County deer studies. He was doing a tour of wildlife in the United States, which is described in his book, *Pelican in the Wilderness*, and he came to Lake County to see our study. So that's where I first met him.

Jarrell: What was Darling's relationship to your work in Southern Rhodesia?

African Game Ranching

Dasmann: The idea came from him. He hadn't done any of the dirty work. Archie Mossman and I did the field study to try to determine population levels of all these different species and what was going on out there and then determine what could be safely removed without reducing the population; we hoped to build the population up to where it should be, before the removal of wildlife was carried out. So we did the field studies and then we had help from the Rhodesian game department with the whole idea of cropping the animals, marketing the meat, proving that you could get more meat and more food benefit and more money out of the wildlife population than you could with cattle. So we were able to carry that study out, and I think establish for that place at least that this worked. That it could be done. Then the idea took off and has gone all over the place. I don't particularly approve of what's happened.

Jarrell: What do you mean?

Dasmann: I mean the whole idea of game ranching has been used to cover a

whole multitude of sins. It's been very bad in many respects. People bringing exotic animals into the United States and then they allow people to go out and shoot them when they've just sort of been turned out of the cage.

Jarrell: Are you saying that there's been a corruption of the original idea?

Dasmann: Yes. I'd hoped from when we went that we would be working with African people, the native people there, to integrate the wildlife back into their economy, which is where it was originally, and had worked for hundreds of years. But we weren't allowed to do that because we were crazy Americans and they didn't want us spreading these ideas of liberation to the black population. So we worked on white-owned ranches, European-owned lands.

Jarrell: Was the impetus for having cattle herds from the colonial white folks?

Dasmann: No. It was both. The normal native population would have had cattle. Cattle were very valued by many of the tribes of people there. Others were not cattle people.

Jarrell: Like the Masai. They're cattle people.

Dasmann: They're cattle people, yes. No, it wasn't just a European idea although we had a whole European tradition of cattle ranching. It had a strong emotional appeal behind it. So that added to the existing African tradition. But what has happened in time, of course, is that in Rhodesia, at least, and in some of other countries like Zimbabwe they have put the wildlife back into the native culture. They're still getting the economic value from the wildlife but now it's for the benefit of the local people to have the population of wildlife, too, because there is an advantage to having a more abundant and greater variety of wildlife on their lands. So it's gone in two directions. The good direction is the one that relates to meeting the needs of the local population.

Jarrell: After you returned to the U.S. you taught Starker's class for a year at Berkeley when he was on sabbatical. How did you end up again at Humboldt State?

Dasmann: I was at Berkeley looking for a university job and they said why not come back to Humboldt since they had a position open. So I went back.

Jarrell: Did you shift directions once you returned in terms of your own interests? You'd been exposed to this other world of research.

Dasmann: My students got an awful lot of information about African wildlife, I can tell you that! (laughter) More than that, though, when we had this whole game ranching thing going we spread the word and on the way home went to the Food and Agricultural Organization of the U.N., and to the IUCN in Switzerland, and onto the British Museum. Getting them interested in it, getting the publicity out in the *New Scientist* and such.

Jarrell: Did this study have a significant impact on the practices in other countries?

Dasmann: Yes, it did.

Jarrell: This was your first experience in international conservation and being involved with these organizations came about because of this research?

Dasmann: That's what got it started. With the whole range of organizations that were interested in Africa, for example.

Jarrell: So when you went back to Humboldt State you had no idea that this other whole part of your life in international conservation would open up?

Dasmann: I didn't have any idea. It opened up because Russell Train read *African Game Ranching*. [2]I was doing a lot of studies, getting studies started on elk in relation to the redwood forest and looking at the whole redwood situation. I was putting together all the information for *The Destruction of California*.

Jarrell: Let's backtrack. How did *The Destruction of California* emerge at this time?

Dasmann: I got into the book writing business through Vinson Brown, who had a publishing house called Naturegraph and wanted us [me and Elizabeth] to do a book on the Pacific coastal wildlife region which included the redwood forest zone and on up through the heavy coniferous forests of Oregon and Washington. We began working on this book; my wife did the illustrations and I did the descriptions. *The Pacific Coastal Wildlife Region* was just a small book. But writing it helped me to realize that I could write books and get away with it.

When I was at Humboldt a representative from John Wiley and Sons visited to see what books we needed [for our curriculum] and what books we might produce for them. They said they needed a book on conservation of natural resources. I said I'd taught a course on that both at Minnesota and at Humboldt. I had all of my notes arranged for lectures and said I could do a book. I had the Carl Sauer lectures in my head, and that background too, which all helped a lot.

So I wrote *Environmental Conservation*, which made a big impression on Frank Fraser Darling.

Then someone from Macmillan Company went to see Frank Fraser Darling to see if he'd be interested in doing a book on the conservation of natural resources for the North American scene. He suggested me. I agreed and wrote *The Last Horizon*. It was beautifully reviewed everywhere and received a lot of publicity. The only thing it didn't do was sell; I didn't get rich from it. But it was a runner-up for the National Book Award.

Jarrell: Yes, it was nominated in 1963.

Dasmann: So that got me on the Macmillan list. Then the editor there suggested that I focus my attention on California. They needed a book on California and said there was a big market within the state. So I said okay and started working on *The Destruction of California*.

Jarrell: When you were asked to do this book on California there was not an implication of the destruction of California? You started writing the book and synthesizing all of the data and came up with a thesis?

Dasmann: That's right. It was partially based on the deer survey and a lot of things fit into the picture. At that time the great Redwood National Park controversy was going on up in Arcata and that was causing very interesting splits and divisions in the natural resource community. I wrote about it in *The Destruction of California*. Some people said that I wrote the book in 1965 and had to leave town and go to Washington, D.C.

When *The Destruction of California* came out it made a lot of noise and got reviewed in all the newspapers. Then my publishers put a certain amount of money in taking me around to all the TV talk shows, but it didn't sell all that much. It came out in paperback and that sold a lot.

Jarrell: That book really rang a bell, not just among academics, but with people who were becoming involved in a more active way in what we now call the environmental movement, including policy makers, city councils, boards of supervisors.

Dasmann: Evidently it had some influence.

bargain and dicker, while all options remain open. But in time they begin to close, and the space for maneuver grows cramped. It is possible at Marco Island and Rookery Bay to seek the best compromise between conservation and development. There are other places where this still can be done. But elsewhere the time has come when it is necessary to win, once and for all, or forever lose. In Florida, generally, there has been too much retreat.

If you can't win the fight for the Florida environment, what can you win, and is it worth winning? Are you really prepared to acquiesce while the dredge-and-fill, the high-rise and low-rise developments, the highways and the jet-ports, the barge canals and industrial parks, cut the land to ribbons? Are you willing to wait until the pesticides accumulate and the wildlife has gone? While the waters of every stream and lake and bay become choked and filthy? Will you be willing to steer your little boat down a dirty canal into a fishless ocean? Do you really want to make extra money at the expense of your home country, knowing it can buy you only a little more of what you already have in surfeit, knowing it can buy you no refuge? Where do you go when all the fair places have been ruined? Where do you go from Florida?

—*No Further Retreat*

(1971, p. 221)

Jarrell: So in 1965-66 Russell [E.] Train got in touch with you. He had just been appointed president of the Conservation Foundation which had moved its headquarters from New York to Washington, D.C. The Conservation Foundation dates back to 1948. Tell me about your contact with Train and how you ended up going to Washington, D.C., to work for the Conservation Foundation.

Dasmann: Well to begin with, this was a follow-up on a meeting on the Future Environments of North America to which I was invited by Frank Fraser Darling. I presented a paper there and it was published and made an impression on Russell Train. That's how he decided to phone me and asked if I wanted to come to Washington. He had assembled Frank Darling, Bill Vogt, Ed [H.] Graham, Fairfield Osborn—a group of the top people in the field of environmentalism, as

it was to be called eventually, working on the sustainable use of the earth. The opportunity to work with these people and for such a prestigious organization was irresistible. I said, yes, thank you. It wasn't that easy. But it was obviously the way we had to go. It took me all over the world. It was a different kind of field work.

Jarrell: Your title at the Conservation Foundation was director of international programs

Dasmann: That's how it ended up. I had three different titles over the years.

Jarrell: Prior to your going out there, did Train explain what he wanted from you, why you were the man for the job? What were you going to do?

Dasmann: Think.

Jarrell: Think. So it was a very prestigious think tank.

Dasmann: That's really what it was at the time. It had that heritage, because Fairfield Osborn, the head of the New York Zoological Society, had aimed it that way, and then it fell to Russell Train to carry on the Osborn tradition, since Osborn just wanted to be chairman of the board.

Jarrell: What was the Osborn tradition?

Dasmann: He wrote a book on population, *Road to Survival*,[3] which came out about the same time as Bill Vogt's book *Our Plundered Planet*. It was a calmer look at the world conservation picture than that of Bill Vogt, who was inclined to be a bit more emotional in his writing. At any rate, he formed the Conservation Foundation as an organization that would conduct serious research on environmental issues (as they were not called then but are now). To get to the truth about these problems, to publish studies available to the government. A lot of working back and forth with the government, with the congress and the administration.

Jarrell: Towards the crafting of legislation?

Dasmann: That, but also providing the background, the information, that a senator or a congressman could rely on. Making it available to them. I had very little, practically nothing, to do with governmental relationships. I was doing the research and making the information available to those who would trot over to the Hill or to the White House and sell it.

Jarrell: I've got my notes from Russell Train, whom I interviewed, to learn about his work with you at the Conservation Foundation. As a digression, he gave me quite an interesting history of the Conservation Foundation, about how it was founded in 1948. He mentioned Wallace [D.] Bowman.

Dasmann: Wally Bowman who went on to be at the Library of Congress.

Jarrell: He was in the legislative reference service. He recommended to the committee staff that they bring on Caldwell.

Dasmann: [Lynton] Keith Caldwell, yes, from the University of Indiana.

Jarrell: That's right. Train described it as two sides of the house at C.F.; one side that was a less intellectual kind of enterprise was focused on outdoor recreation and the White House conference on beautification and Lady Bird Johnson and Laurance [S.] Rockefeller and those sorts of enterprises. He said the other side of the house included you and several young ecologists working on various projects, papers, on how to integrate ecological values into public policy.

Dasmann: Yes. We produced a book on that, *Ecological Principles for Economic Development*.

Jarrell: You worked with John [P.] Milton and Peter [H.] Freeman.

Dasmann: John Milton was a young guy at the time from the University of Michigan, one of Stanley [A.] Cain's graduate students. He was with the Conservation Foundation longer than I was. He was there when I came and he was still there when I left. He and Kathy McNamara, [Robert F.] McNamara's daughter, were working with me during my last year with the Conservation Foundation.

When I went there originally, there was a real powerhouse team on the ecological side with Frank Fraser Darling, Bill Vogt on human population issues, and Ed Graham on land use issues. They were the top-rated people on earth at that time, as far as the application of ecological knowledge goes. Then of course there was Fairfield Osborn, who was the chairman of the board. So it was really interesting. I moved over into the planning area which got me into the other side of the issue, with the planners, the outdoor recreation and the city planning side of things. But I was happier staying with the ecological side.

Jarrell: How was the work divided up and where would the initiatives come from? Or were you sort of each on your own?

Dasmann: To some extent a little of both. Someone would come up with a really bright idea and Russ would say okay we'll do it. Then he would talk to the whole staff and assign someone to take the lead on it. That would go ahead. Like I put a lot of time into, you might say planning, but based on ecological stuff for the Rookery Bay Project in southern Florida.

Jarrell: Near Naples Bay?

Dasmann: Yes. That was something I was very much involved with. It went on and on after I left. Someone new came in and took it over. But it had to do with reconciling the pressure for development in the mangrove swamps and waterways of the Florida peninsul—how can you build houses and have people living there and still maintain the wildlife refuge? It was an interesting challenge and we had a lot of talent working on it from the University of Miami as well as the Trust for Public Lands and others.

Jarrell: Now how would a project of that kind have gotten connected with the Conservation Foundation?

Dasmann: The Conservation Foundation was the think tank of the conservation movement. Others might dispute that title, but still we had a great deal of prestige going for us. So issues of major importance would tend to come our way and we'd look at them and come up with an impartial review of the situation.

Jarrell: So people in Florida, environmentally conscious, aware of the damage done by development, communicated with Russell Train?

Dasmann: I don't know who, but most likely it was someone like Nathaniel [P.] Reed who was at that time environmental advisor to the governor of Florida. He had a tremendous amount of political influence and was very keen on environmental issues.

Jarrell: What were some of the other projects that you worked on for the Conservation Foundation?

Dasmann: I got there in January, 1966. Almost immediately we got a request from UNESCO for someone with an ecological background and an ability to write a background paper for the conference that UNESCO wanted to hold called Man and the Biosphere.

Jarrell: Who coined that term?

Dasmann: Probably Michel Batisse.

UNESCO

Jarrell: From 1966 to 1970 you were at the Conservation Foundation and also a consultant to UNESCO during that same period. How did your work with UNESCO come about?

Dasmann: They went to Russ Train, who suggested me.

Jarrell: What did they want you to do?

Dasmann: They wanted me to write a background paper on the rational use of the biosphere.

Jarrell: Where did the concept of biosphere come from?

Dasmann: It's a term that originated, I think, with the Russians; [V.I.] Vernadsky used it first to mean the environment in which life could exist around the total globe. We argued for years over the correct definition of the word biosphere. I finally got the definition I was pushing for in the Man and the Biosphere program. I had a lot of arguments on that. Some wanted to restrict it to living organisms. I argued that you can't have living organisms without an environment that they depend on. So you can't separate the two.

Jarrell: It's like trying to separate body and soul. You can't do it.

Dasmann: Exactly.

Jarrell: So you were working during that time for UNESCO, and Russell Train told me, "My office adjoined Ray's and he was in there furiously writing, focused, on this project for UNESCO." So this was the report, this background paper you were writing.

Dasmann: UNESCO gave the Conservation Foundation a contract to produce this. I stayed on the C.F. payroll.

Jarrell: Did you work with people at UNESCO when you were writing this?

Dasmann: Everything I wrote had to pass through the screening of the Russians, the French, the Germans, the whole works. So that the words meant the same thing and conveyed the right image to all of these countries.

Jarrell: What part of UNESCO, what agency was this in?

Dasmann: It was under the science part of UNESCO. I think Batisse was head of that side of UNESCO at the time.

Jarrell: Where had the initiative, the impulse, for this come from?

Dasmann: It came from the International Biological Program, IBP, which had been going for roughly ten years. It was just about to expire, and the idea was for UNESCO to come up with an intergovernmental program that would take the place of the International Biological Program when its contract ran out. It had a ten-year span, I think.

Jarrell: So that was the precursor? What had IBP done?

Dasmann: They did much the same sort of thing that we were trying to do with the Man and the Biosphere program, in that they were looking at the whole global environmental situation, studying various aspects of it and trying to come up with an overall view of what was going on.

Jarrell: An identification and diagnosis, or a prognosis as well?

Dasmann: All three. The thing was though, the International Biological Program was purely a scientific program that didn't necessarily involve governments, except to say we'll give you a thousand dollars or a million dollars or whatever they were dealing with at the time to carry out this work. But it didn't involve commitments by governments at all. Consequently there was a lot of a good research that went on, but no way of putting it into action. A group of people from around the world would essentially set priorities for what needed to be done and then they would try to get the money to get that accomplished. It was fine as a research effort but not in the sense of changing anything on the ground.

Jarrell: Nothing was implemented in terms of the public policy of a given country?

Dasmann: That was one of the weaknesses. At least so I was told at the time that this shift was going on.

Jarrell: It had a mandate for a decade. So it was going to be taken up by the M.A.B. Whom did you consult with in writing this background paper? Did you do it all on your own?

Dasmann: I did the first draft on my own. Then everyone tore it apart and gave it back to me and I rewrote it and then they'd tear it apart again. It was everyone,

the representatives from the different countries and the agencies who were concerned with this field. In the U.S. the National Academy of Sciences contributed to the I.B.P. part. But for the M.A.B. part it was the state department.

The problem was that, as usual, there wasn't any money. Then of course is the fact that the right-wing in Congress was opposed to the United Nations, and UNESCO in particular, which they hated, and so it's who best can survive the attack.

Jarrell: How did it land in the U.S. Department of State, bureaucratically?

Dasmann: The U.S. State Department is involved with any sort of international commitment to an international agency, so, it falls into their bailiwick, even though they may assign it to the Department of the Interior or the Department of Agriculture. I've never been involved with the political side of this, of how to get things through Congress, to get things done at the legislative level. I've not been very much involved with that.

Jarrell: I have read the extensive websites of Man and the Biosphere projects all over the world but I have never had access to that background paper. What was the gist of your thinking? What did you suggest? What were your recommendations that went through so many drafts?

Dasmann: It's sitting in there on my shelf.

Man and the BiosphereJarrell: "Conservation and Rational Use of the Environment." This is a draft of the origins of MAB prepared for UNESCO.

Dasmann: The purpose of the paper was to set the background for this international conference on Man and the Biosphere held in Paris in 1968, so that they all came in with the same background or knowledge or arguments, one way or the other, about what should be done. But this was supposed to be read by all the delegates who were there.

Man and the Biosphere Conference was the short title for it, but it was a scientific conference. It did not involve the state department or the ministers of environment around the world. It involved their scientific experts. The Man and the Biosphere Program was created as an intergovernmental conference, involving the ministers of the environment. The scientific conference called for an action program that involved the governments, but that had to go through the

UNESCO general council to be approved by the political representatives.

Jarrell: So the first phase was scientific, laying out the backdrop, coming to a common agreement on terms.

Dasmann: Yes, so we were all talking the same line.

Jarrell: You had to agree on how to define the word conservation, every concept?

Dasmann: Absolutely.

Jarrell: There could be myriad ways to look at that.

Dasmann: There were arguments about that; there were arguments about every word, practically.

Jarrell: You provided the historical background of conservation and conservation as an integral part of culture.

Dasmann: Then that conference led to the Man and the Biosphere Program which finally got going in the early 1970s; it got going with as much momentum in 1974 as it has ever generated. It took an awful long time to get any movement going, from 1968 to 1970 to 1974. But finally things did begin to happen. Studies were carried out. Governments did make certain commitments. I think, for example, they started ministries of the environment in many countries, which they'd never had before. In this country it was the Environmental Protection Agency that got started.

Jarrell: Train said he left the Conservation Foundation in 1968 to chair a task force for President Nixon in the Department of the Interior leading to the foundation of the EPA.

Dasmann: Yes and no. This was a further push for that but the conference that was held in the United States on the "Future Environments of North America" was the one that sort of touched off this push for the Environmental Protection Agency.

Jarrell: And what was that conference, for North America?

Dasmann: It was called The Future Environments of North America. It was organized primarily by the Conservation Foundation as it existed at the time. It was a conference to which individual experts were invited, to look at what the

future may or may not have held for the environments of North America. We had people from Panama to Canada involved, but they were selected individuals.

Jarrell: It was an NGO, scientists, conservationists, and organizations?

Dasmann: Yes. I gave a paper at that conference and I subsequently was invited to join the Conservation Foundation.

Jarrell: So you were working on MAB while you were at C.F. and wrote this background paper that laid out the basis for the MAB program, which eventually was implemented.

Let's go back to the Conservation Foundation. Russell Train left in 1968 and then Sydney Howe became the president. You said to me something to the effect that you were sort of discouraged after Russell left. Something had gone out of the organization. Could you elaborate on that?

Dasmann: The organization became much more oriented toward city environmental problems, from pollution, on to crowding, to poor housing, to the whole urban environment and I was not primarily interested in that area. The ecology side of the Conservation Foundation tended to get pushed aside a little in favor of the social science side of the Conservation Foundation. So by that time I didn't feel particularly at home with the organization. I would have stayed there except that I got involved with UNESCO and then with IUCN, and I was invited to work with them instead.

Stockholm Conference of 1972

Jarrell: You were working for UNESCO and then in 1969 you were involved in the initiatives that led to the Stockholm Conference in 1972.

Dasmann: Batisse and an Australian, Guy Gresford, invited me to come to New York to work on a draft for a speech for the Secretary General.

Jarrell: This was in 1969 even though the conference didn't take place until 1972? What was the gist of that?

Dasmann: Essentially the state of the environment and what could be done about it.

Jarrell: I think of the Stockholm Conference as a landmark date in this

chronology.

Dasmann: My paper was finally published in Italian in the *Mondadori Encyclopedia* after it was released by the U.N. They told me I could take credit for it since I had written it. But it was the basis for Secretary General U. Thant's speech at the general assembly of the United Nations calling for the U.N. to become involved in preparing this intergovernmental conference on the environment at Stockholm.[4]

Jarrell: Would you say that the Stockholm conference was a descendent of the MAB endeavor?

Dasmann: Yes. It was a subject of argument between people who saw the Stockholm conference as the forerunner of everything and those who saw it as the descendent of the MAB initiative. As far as I was concerned the one led to the other. But that's not necessarily the official point of view.

Jarrell: The Stockholm conference was a watershed, one of those markers. I've been reading *The Green Web*, on the history of the IUCN, the International Union for the Conservation of Nature. It seems that the same sort of dichotomy that appeared in 19th and early 20th century American environmentalism or conservation, took place on the world stage. What was the significance of the Stockholm Conference?

Dasmann: The 1968 Biosphere conference that UNESCO held was a conference of scientific and other experts. The Stockholm Conference was an intergovernmental conference of the highest order, involving prime ministers, presidents from around the world, and committed governments to do various actions.

Jarrell: How do you integrate ecological values into governmental policies? That's sort of the thread through all of this. When you wrote the MAB drafts what was your thinking on that? How could these values be implemented at a policy level, in the field, on the ground, in the lives of people.

Dasmann: That's a difficult question. How do you get from here to there?

Jarrell: You mentioned the book edited by William L. Thomas, *Man's Role in Changing the Face of the Earth,* had an important impact on you.

Dasmann: It was probably the first of this whole new wave of looking at the total environment instead of just focusing on the local issue or a certain species. It

was particularly valuable because it went back to the Stone Age to see how conservation ideas developed over time and how things began to happen. The conservation of wildlife, for example, would date back to the king's forest in Mesopotamia or the king's hunting ground. That all began to come together with a conference in 1954, which led to the big thick volume, *Man's Role in Changing the Face of the Earth*. I was still working on my Ph.D. and later it really helped me write *Environmental Conservation*, my textbook, because I used the same approach.

Jarrell: You were putting together this wider, more encompassing ecological vision, drawing together and integrating the environment and the organismal; as you said, organic and inorganic are completely intertwined. During the ferment of the 1960s and the 1970s, you said a number of thinkers had influenced you including, Theodore Roszak, Barry Commoner the economist, E.F. Schumacher, Gary Snyder, and Jimoh Omo-Fadaka—all of these different threads were informing your thinking and enriching the way you were conceiving of the concept of sustainable development.

Jimoh Omo-Fadaka

Jarrell: Why don't you start with Jimoh Omo-Fadaka?

Dasmann: He's a Nigerian whom I first knew through his papers in *The Ecologist*. I thought he had hit the nail on the head in talking about Africa, and how national boundaries had been drawn up in Rome or Berlin or somewhere that had nothing to do with people on the ground. He wrote of the need to redefine nations in Africa and to put political power and authority where it belonged with the national group inside the national boundaries instead of the mess that was created by Europe going in and saying, okay this is the Sudan here. It just runs down this line and this is Egypt there. Anyway, he was very influential on my thinking because he was arguing from the point of view of Africa primarily, and the problems that they encountered. But we met at conferences around the world and did a lot of work together.

Jarrell: Does he still live?

Dasmann: Yes. He went back to Nigeria. They had all that trouble there and I didn't know if he ever received my letters or whether he was shot, or what

happened. For a long time I was not able to find out. Recently I have heard from him and we may hear from him in the future.

Jarrell: One of the facets of the idea of sustainable development is the critical importance of indigenous people and their cultures; that you can't impose something from without, that you have to work with the total environment, which is the people and their cultures. Did he illuminate that idea to you?

Dasmann: Well he and I agreed. I finally met him at the World Population Conference in Bucharest, Romania, in 1974, after I read the papers he'd written, which I tended to agree with totally. We became very good friends, and then we got to know his family and wife. They were all here once staying in the house.

Jarrell: When he was writing, was he living in Nigeria?

Dasmann: He was in England most of the time. He had a base in London and worked with the group publishing *The Ecologist.*

Jarrell: Where had he been trained?

Dasmann: He had a Ph.D. from the London School of Economics in environmental economics.

Jarrell: What about E. F. Schumacher?

Dasmann: Well I'd seen him. I'd heard him talk, but never met him. He was very influential in the 1970s. His best known book was *Small is Beautiful*.

Environmental Studies as an Interdisciplinary Field

Jarrell: There was much intellectual cross-fertilization going on. In a sense, as an academic field, ecology, environmental studies, all of that was kind of a hodgepodge. I don't think it had a clear identity as a single field. It's always been very cross-disciplinary.

Dasmann: It has to be. That's where it runs into problems. But the reason for its existence is to pull together many different disciplines.

Jarrell: Cultural anthropology, economics, the fields of natural history, biology.

Dasmann: Environmental studies necessarily involves all these disciplines. But universities are set up in such a way that they encourage extreme specialization; without specialization, you don't get promoted; you probably don't get a job in

the first place. You have to prove your scientific credentials. When you reach out to other disciplines and try to integrate them you're usually perceived as encroaching on everybody's territory and they bite you.

Jarrell: You began on a very orthodox path; you started out very specialized, got your data, jumped through all the hoops, did the very orthodox, conventional thing. It seems to me as I look at your work, that you just keep embracing more and more.

Dasmann: That's true.

Jarrell: Are you saying that the intellectual imperatives of environmental studies don't dovetail very well with the paradigm of the university?

Dasmann: You always have to fight for your existence as an environmental studies program. It's the first one they will decide to eliminate if they are trying to cut the budget. You jump in and argue some more and finally survive. And that's crazy. I'm sure glad to be out of it. I didn't follow the tried and true path. If I had, I'd still be doing research on deer. Smaller and smaller parts of the deer, the deer's DNA.

Jarrell: That's what the system promulgates and encourages. Although there are interdisciplinary breaths that periodically emerge in the university, it doesn't seem really to take hold.

Dasmann: No. But if you want to save the world you have to do that.

Ecodevelopment and Sustainable Development

Jarrell: I am interested in the evolution of the concept of sustainable development. Early on you used the term ecodevelopment. Could you elaborate on that?

Dasmann: The term ecodevelopment was not mine. After the Stockholm Conference there was a new agency within the United Nations concerned with environmental protection. Its headquarters were in Nairobi with a branch office in Switzerland. Maurice [F.] Strong from Canada was named head and he came up with the word ecodevelopment to indicate the aim of the United Nations environmental agency.

Jarrell: What does ecodevelopment mean?

Dasmann: Ecologically-based development, essentially; development that takes into account the nature of the ecosystem and how it is affected by human activity and what is necessary for development to be sustained without damage to the total environment in which it takes place. The term ecodevelopment has expanded over the years and became much more solidly based in ecology. The term sustainable development came as a result of the Brundtland report. The term sustainable development leaned very heavily on sustainable economics, rather than thinking about the base on which the whole economy depends. At least that was the feeling that I had when I first read it. I still have that feeling. I had my students read it as part of my class. They also quite independently came to that conclusion that there wasn't enough ecology in the push for sustainable development. So there's still this problem of a difference between the two—between the term ecodevelopment and the term sustainable development that's being kicked around now.

Jarrell: So ecodevelopment, ecological development, gives an emphasis to the ecological dimension whereas the term sustainable development emphasizes the economic dimension?

Dasmann: Yes. But more than that, the term ecodevelopment has also tended to emphasize achieving self-reliance, if not total self-sufficiency; self-reliance on the part of local communities; that development should be aimed at the core segments of the society and attempt to bring them up to where they have a reasonable standard of living and are still living in balance with their environment, which of course they were doing long ago before Western civilization and technology. So in a sense ecodevelopment is going in one direction and the present drive towards globalization of the economy is going in the other direction. I have the feeling that globalization is aiming for failure in the long run and the other is the most hopeful way.

Jarrell: When you were refining these concepts especially in the locus of the U.N., was it directed at Third World countries more than First World countries?

Dasmann: Primarily, yes. Because the urgently needed assistance in development is from the Third World countries. Here in the First World we can stagger along with our system for a while longer. It's not as immediate; people aren't starving in the millions as they might be in some of the so-called undeveloped countries.

Jarrell: Were there particular countries or locales, to make this more concrete, that you had in mind, or that you were kind of bouncing your ideas off of?

Dasmann: Yes, I started on sustainable development with my deer study. We were studying how to achieve a sustainable deer population so that there weren't these wild fluctuations with all kinds of agricultural damage up here and too few deer down there, bouncing up and down. At the same time we attempted to apply this to the broader picture of how to maintain a sustainable ecosystem, on which ultimately we depend while at the same time doing agricultural or other types of development that will benefit people's economic well-being. The idea is to do development in such a way that first of all it tackles the most poverty-stricken regions of the world; and secondly, that it is sustainable over the long run.

Jarrell: Did you visit some of these countries?

Dasmann: Apart from the work we did in Africa which was aimed at sustainable development of African wildlife and with African people, I worked with the Conservation Foundation, with UNESCO, and then with the IUCN. So I traveled around a lot to other countries.

South Pacific

When I was with the IUCN I spent a lot of time in the South Pacific because I was interested in that region when no one else was. I went back and forth to the South Pacific areas. When dealing with islands you see the environmental problems in a microcosm; they either have to find a sustainable life or they have to get off the island.

Jarrell: What were the specific places that you were visiting and focusing on?

Dasmann: Well, we spent some time on New Caledonia, for example, still a French colony; Western Samoa, the independent part of Samoa; Tonga; and Fiji.

Jarrell: Where did you get your interest in these places? Was it from your experiences during the war when you were in that part of the world?

Dasmann: Yes. I'd been back and forth to Australia quite a bit. And Australia and New Zealand, in particular, are much more focused on the Pacific islands than we are here because they are neighbors. Many of the islands have worked

with New Zealand on a lot of the things they do to be represented in the U.N., because they can't afford to do it themselves. At any rate they are very vulnerable; they have a great potential for sustainability but they are very vulnerable and tend to be injured by the global economy which is looking at the bottom line in economic terms. But Africa has been of particular interest to me, too.

Sri Lanka

More recently in the mid-1980s I did some work in Sri Lanka with their national park service and got their view of how things are. I also had the opportunity to compare intensive development of dams and irrigation systems and movements of people to create more rice paddies and such, as compared to the slow, gradual approach of working with the villages to see what they need and working more toward sustainability through that. Sri Lanka has an enormous water development project damming the major rivers with a whole series of dams, creating new agricultural lands out of what was wildland to a large extent. It's a very interesting area to work on.

The U.S. National Park Service was brought in by the Sri Lankan government to assist with a big development project establishing national parks to partly compensate for the loss of wildlife that would take place as a result of the development. Of course that was interrupted, you might say, by the civil war that's been going on ever since. We first went to Wilpattu National Park in the northern part of Sri Lanka and talked to their department of wildlife conservation at the national park. After we left, the rebel group came through and wiped out all the people we talked to. They didn't have anything against the park service. They were just passing through. But until they get this war settled it's pretty hard to deal with anything. When I last was there I couldn't work on the northern part of the island. I had to go to the southern part of the island and even there people were being shot by roving bands of Tamils.

Intellectual Influences

Jarrell: Last time you spoke about several of your intellectual helpmates. You talked about Jimoh Omo-Fadaka and E. F. Schumacher. Who was [Leopold]

Kohr?

Dasmann: An Austrian who has written particularly about population problems and what could be done about them. He's strongly in favor of decentralization, providing essentially smaller countries, more unified nations, instead of what we have tended to do in the past. The national boundaries were of course drawn by Europeans in Africa and Asia and elsewhere.

Jarrell: In the post-colonial world the artificial boundaries which we're living with today completely overlook the cultural and community and natural realities of these places.

Dasmann: Absolutely. They just drew a straight line, did a survey. At any rate, he was a writer. I heard him lecture too.

Jarrell: How did he influence your thinking?

Dasmann: Well I just started thinking about that aspect of things, the advantage of smaller systems, smaller nations, which tend to cause less trouble than big nations.

Jarrell: What about Barry Commoner?

Dasmann: Well Barry Commoner emphasized the economics of population. He and Paul Ehrlich were always in disagreement about where the emphasis should be placed. Commoner tended to think economic development had to come first and population would stabilize afterwards, while Ehrlich maintains that if you don't stabilize the population, destruction will result from overpopulation and make any real gains in economic standards non-existent.

Jarrell: Peter Berg was the co-author with you of an article, "Reinhabiting Caliifornia" which appeared in *The Ecologist* in 1976 and has been reprinted elsewhere. How did you get hooked up with Peter Berg?

Dasmann: Through the Stockholm Conference. He called me afterwards to talk about the conference. *The Ecologist* asked me to revise his article, which I did. Then I met with him in the Bay Area when I was out on leave. We were interested in moving to the country and setting up a place, seriously considering dropping out of everything and just going and living in the woods. He steered me towards Gary Snyder and the community where he lives in the Sierra foothills. We found a place near Nevada City. One after the other my daughters occupied our house there for twelve years. We sold it eventually because finally

nobody was living there and we didn't want to leave it vacant.

Jarrell: So you met Gary Snyder through Peter Berg?

Dasmann: That's right. We bought some land on San Juan Ridge in 1973, a couple of miles from Gary Snyder. We were still living in Switzerland as a permanent place. On these frequent trips to the States that I made for my work for the IUCN I could take some time and see what was happening in my home territory.

Jarrell: Tell me about Gary Snyder and what influence he had on you.

Dasmann: I like a lot of his writings, his ideas, and his approach to nature protection; living on the land without hurting it, without harmful effects. I met him on the trip that we made up to San Juan Ridge, to his house up there. So I got acquainted with him and various others like Allen Ginsberg. It was an interesting time. It was a totally different point of view and way of life from what I'd been dealing with internationally; a big difference between a United Nations conference and a cabin on San Juan Ridge. I was also getting homesick about then for California.

Society for Conservation Biology

Jarrell: Tell me, moving ahead, into the 1980s, when the Society for Conservation Biology was established in America, why was that so significant?[5] You told me that you prefer to be known as a conservation biologist.

Dasmann: It was partly because the movement was led by people whose scientific credentials were impeccable. At the same time it was consciously trying to form a base for the conservation movement, I would say. Michael E. Soulé, Bruce [A.] Wilcox, Reed [F.] Noss, and others were the principal founders of the Society for Conservation Biology.

Jarrell: What do you know about the history of the society, how it came together? I remember when my son was a student at Reed College in the mid-80s he discovered Michael Soulé and others from his biology professors. He found that his science and environmental concerns, everything he cared about, got drawn together by these conservation biologists. I think many young biologists in the new generation have been influenced by this confluence. What was Michael Soulé's background?

Dasmann: His background was primarily in genetics. As a student, he worked with Paul Ehrlich at Stanford, and established a good reputation in emphasizing the importance of protecting genetic variability as part of an overall conservation movement, of, say, wildlife; to enable a species to survive under changing environmental conditions. He stressed the necessity of paying attention to the conservation of a genetic variety within a species as compared to protecting a representative area for a species to occupy. It was a new approach. He gave a new emphasis which became quite important. I remember when Soulé and [Sir] Otto Frankel got together and Otto Frankel asked me if I knew Soulé. I told him I didn't but I'd heard good things about his work. He was pulling together a book on genetics as related to conservation and biodiversity.

Jarrell: Although the Society for Conservation Biology was established in the United States, it has had such import internationally, according to Martin Holdgate.[6]

Dasmann: Yes. It did, I think. For one thing, the conservation biologists started facing up to the problems of the insularization of conservation, by which I mean the idea that you can have a protected area with boundaries around it and not worry about what goes on outside because you've got one little area protected, that's not true anymore. Everyone knows that now. You've got to pay attention to the whole landscape, to the whole terrain, the whole vegetation and everything that contributes to the ecology of that particular area. Furthermore, when you begin to look at the effects of insularization, on creating little islands of conservation, then you run into the problem you have with real islands where you continue to lose species just by accidental genetic changes taking place within the population on the island, where they no longer have access to a broader population, extending out beyond the island. This concept is derived from the work of [Robert] MacArthur at Yale and Ed[mund O.] Wilson at Harvard, who really brought the problem of island populations to light and they certainly influenced us at IUCN.[7] I became very interested and was corresponding with Soulé about the time everyone was getting together to form the Society for Conservation Biology. I couldn't go to the meeting where it all happened but I thought it was great to see this new organization taking shape, conservation biology with its broad look at the whole problem and not just looking at a part of the problem.[8]

Jarrell: That seems to have been a trend ever since Man and the Biosphere, and

the idea that you couldn't have, as you call it, this insularization; you had to start seeing that everything was interconnected. You couldn't just save these little pristine islands; you couldn't artificially separate out a little wilderness system here, a little something there. I see that over twenty years, from the 1960s to the 1980s, that that model, that idea, starts to take hold more and more.

Dasmann: Definitely. It's now the basis for legislation and action and has become increasingly important.

Garrett J. Hardin

Jarrell: At the Stockholm Conference, the U.N. Conference on the Human Environment, one of the key results intellectually was that, notwithstanding all the politics going on, there was an inextricable link made between the environment and development, which I don't think had been explicitly outlined prior to that; that you couldn't have preservation of an environment without taking into account all of the external developmental impacts that were taking place. Then also at that conference, there was the declination of north and the south, the first world and the undeveloped world. You were talking about some of the people there. It sounds as if it was quite a crowd. Was Garrett [J.] Hardin there?

Dasmann: Yes, I think so.

Jarrell: Would you give me your take on him. What do you think about his point of view?

Dasmann: Well his method, I'm not sure whether you would call it Jesuitical, but his way of taking things and analyzing them and then reconstructing them into a different pattern. You go along with him taking things apart and then reconstructing them. But then you wonder, finally at the end, how did you get to this conclusion. And you have to go back and see where you disagree with his reasoning process. It's a challenge. His books are always a challenge to one's thinking. I think it's fascinating, the way he does it. I mean I'll think, gosh he's right about that, and about that and about that. But he's wrong about that! So you have to go back and put it all together again. So it's an interesting exercise. I can't give you specific examples because I haven't looked at his books in awhile now and they all tend to mesh together. But "The Tragedy of the Commons"

really launched him. I don't agree with his thesis but his reasoning is very good. It's excellent.[9]

Jarrell: Did he have much influence on the environmental movement?

Dasmann: Yes. He has had influence because he's such a gadfly. He's always there stinging you when you don't expect it. You have to take that into account. He brings up points that you've forgotten about and you have to rethink everything again. I find it a fun exercise. But some people get quite furious about him.

International Union for the Conservation of Nature

Jarrell: From 1970 to 1977 you were senior ecologist for the International Union for the Conservation of Nature. During that period you were a consultant for UNESCO as well. How did you get to the IUCN after you left the Conservation Foundation?

Dasmann: I was involved with handling the international side of things with the Conservation Foundation. As a result of a request from Michel Batisse of UNESCO I worked with UNESCO on developing the Man and the Biosphere conference. That was the beginning. I continued working then developing the Man and the Biosphere program in particular paying attention to the conception of the biosphere reserves, which is a move away from the strict national park model to a more integrated park economy concept. In the process of doing that I worked with Gerardo Budowski, who became the director general of IUCN. When he took over IUCN, because he and I had known each other at UNESCO, he invited me to come to IUCN as senior ecologist, which was approved through their board.

It meant we had to pull up stakes and go to Switzerland. When we went to Switzerland my daughter Marlene was at the University of Colorado at Boulder. Sandra was in the San Francisco area. I think she was working by then. She was through university. Lauren was still in high school so we put her in a private school, Foxcroft, a boarding school in Virginia. Then Elizabeth and I went to Switzerland and established ourselves there.

The IUCN was a whole new ball game. They'd received a big grant from the Ford Foundation and also funding from the Rockefeller and other foundations.

So it was possible to hire a high-powered staff. Director Gerardo Budowski was an outstanding tropical ecologist. Frank Nicholls was an administrator with experience in Thailand and southern Asia. And a number of other people came in. So it was an opportunity to do something big. It was also a non-governmental organization, basically, so it wasn't under the same constraints that you would have with UNESCO, say, where everything has to go through the general council and be approved by all the government members. So it was just a more interesting opportunity besides being in Switzerland along Lake Geneva, which beat being in Paris, I thought. I think we all agreed on that.

Jarrell: What was the size of the IUCN when you went to work for them in 1970?

Dasmann: Well it depends on what you call the IUCN. The paid staff was quite small, maybe a dozen of us. But it depended a lot on its commissions of experts in different fields related to the conservation of nature and the member organizations which were all over the world, both governmental and non-governmental organizations.

Jarrell: When I was researching the IUCN I understood its structure as tripartite, the in-house paid central staff, the commissions of experts, and then this far-flung, world-wide group of member organizations.

Dasmann: The member organizations met every three years in a general assembly in which they decided the policy for the next three years. But the general assembly, and in fact IUCN, was not non-governmental so much as quasi-governmental; they had both government agencies and non-governmental organizations as its membership. The votes in the general assembly had to be bicameral. The governments could veto anything that the non-governmentals put forward. So it was a challenge to get things accomplished working with that kind of system. But I think it was a pretty effective organization on the whole and still is.

Jarrell: What were the main thrusts of your interests at the IUCN?

Dasmann: I worked on a number of different issues. To begin with we had to tackle the question of how to reconcile all of the different views of defining what a national park is, or what it should be, and to come up with the United Nations standard defining national parks. The IUCN was charged by the United Nations to produce a world list of national parks and equivalent reserves; to evaluate the parks around the world in different countries; and to get them described and

published in a book which was revised every few years.

Then came the realization that we didn't really have an effective way of protecting species while also protecting total ecosystems. So I was working on a system of biotic provinces to see how you could combine species conservation with total ecosystem conservation which led to the mapping of the biotic provinces of the world and eventually UNESCO published that.

Jarrell: Whom did you work on that with?

Dasmann: I worked with our ecology commission and other experts around the world. I'd keep sending things out and ask them for comments on this map or that map to draw a line properly. It was a combined effort; it was a matter of trying to pull together everything that we knew or could find out about, where a line should be drawn to protect not only the biotic communities, the natural systems, but also individual species. Previously there had been a lot of emphasis on, protecting, say the tropical rainforests, but the tropical rainforests in Africa or in Asia are different; you look at all the pictures of tropical rainforests and you realize that it's not enough to just protect a tropical rainforest. You have to have them all over the world in different systems, in different biotic provinces where they have different species composition. Anyway, that was an interesting assignment.

I did a lot of traveling to see what was going on in different parts of the world and to evaluate some of the things that we were trying to do and to also respond to requests for financial assistance in projects in different countries. Working with the World Wildlife Fund which was part of our source of financing.

World Wildlife FundJarrell: How did the World Wildlife Fund dovetail into all of this?

Dasmann: Well it didn't dovetail all that well. That was part of the problem. Originally the idea was that the World Wildlife Fund was created as a fundraising organization for IUCN. But then it grew and grew and wanted to evaluate its own projects. It kept hiring people to duplicate the work that was being done with IUCN. There was a lot of room for conflict.

Jarrell: The World Wildlife Fund was based in America?

Dasmann: No, it was based in Switzerland. We were in the same building

originally. But then the World Wildlife Fund got a lot bigger and had a separate building but we were in the same town. It's still that way. The World Wildlife Fund International is international but there are World Wildlife Funds in many different countries. The U.S. World Wildlife Fund has always been pretty independent of the international.

Jarrell: I want to read you something from Martin [W.] Holdgate's book *The Green Web: A Union for World Conservation*: "Whereas in 1956 the Commission on Ecology really was a main focus for ecologists concerned with the conservation of nature and natural resources and the management of species and ecosystems, by 1970 the Union's position was severely eroded. In 1969, partly so as to establish its status as a major scientific partner in the preparation for the forthcoming Stockholm Conference, they established a scientific committee on problems of the environment to report on global trends in the biosphere and environmental issues most urgently requiring international and interdisciplinary scientific effort." He said these changes had an impact on the IUCN. "The Commission on Ecology led in succession by François Bourliere, Jim Cragg, and Donald Kuenen retained a broad program, which between 1966 and 1973 encompassed ecological aspects of soil and water conservation, etc." Then he says, "this period saw the beginning of the separation of the conservation movement from scientific ecology, the separation which weakened conservation until the mid-1980s, when the Society for Conservation Biology began in the United States and the concepts both of sustainable development and of biodiversity, began to bring the two together again and to draw in economists, social scientists and political figures as well."

So there was a separation of the conservation movement from scientific ecology; there was a dichotomy until the 1980s, when the Society for Conservation Biology was founded.

Dasmann: I can see why he would say that, because the scientific ecologists were busy doing their research. The conservationists were busy trying to promote government or private action. There was not a good meeting of the minds between them. The conservationists, let's call them that for the moment, were pushing off beyond where there was knowledge to back them up. It may have been a good thing to do at the time but it was hard for the ecologists to tune in and go along with their statements because they didn't feel like they had the data to back it up. I think that began to change, however, with IUCN, more when

the secretariat was strengthened and less with the role of the Ecology Commission. The Commission tended to be downplayed a bit, starting in 1969 or 1970, when they brought in Budowski as Director General, a really first-rate ecologist. There's no question about it. Then I came in and I was again pushing the ecological side and reactivating the Ecology Commission. The Ecology Commission was fine for carrying out studies and pulling the facts together but it was not in a position on its own to do anything about it, whereas the secretariat was, as time went by.

Jarrell: What did you feel you accomplished while at the IUCN in terms of your own growth, your writings and explicating your ideas? What was the sum total? When you left did you feel a sense of completion?

Dasmann: I felt I'd started a lot of things which I hadn't finished and didn't know would ever be finished. But on the whole the work I did there was very satisfactory to me and brought me in touch with a wide variety of people whom I would not have met otherwise. All the countries of the earth, you might say. The situation, however, gradually deteriorated from a high point when we first got started, say in 1970, and then went downhill in many ways.

The trouble with all these organizations is they're torn apart eventually by interpersonal rivalry, and the inability of people to get along with each other. That's what seems to wreck one after another of these organizations. It isn't a disagreement over scientific theory or the facts that you discover; it's just personality clashes. This hit the IUCN badly. It took them quite awhile to recover. It's continually hitting Dave [David R.] Brower. Starting with the Sierra Club, then Friends of the Earth, and now Earth Island Institute. These personal feuds get started and get worse and worse. They override the work you're trying to do. Finally the whole organization collapses because of this. And you have to rebuild it.

Jarrell: That happened at the IUCN?

Dasmann: Very definitely. Read in Martin Holdgate's book about the night of the long knives.

Jarrell: Yes. Then there was the relationship between the World Wildlife Fund and IUCN. You talked about the Ford Foundation grant, and the internecine warfare or conflict between these two organizations. It sounds like the IUCN was about to go down the tubes.

Dasmann: Yes.

Jarrell: Why did you leave?

Dasmann: I left because— You want the whole story?

Jarrell: I'd love the whole story.

Dasmann: Mostly I had an independent role at the IUCN. I had things my own way; I was working on the stuff that interested me and we'd all decided was important. Let's do this and get that done. I was probably working on the biotic province situation at the time that we went into Kinshasa and the General Assembly meeting in Zaire.

I had this whole idea of ecodevelopment; I was putting a lot of time and attention into that. I was interested in the work I was doing and wasn't paying attention to what was going on around me. It was obvious that there was a real schism developing between the director general, Gerardo Budowski, and the deputy director, Frank Nicholls. That was getting worse. Frank Nicholls was an administrator and an excellent organizer. Budowski was really the idea person with his background in ecology and his ability to see the picture from the scientific point of view. So there was a conflict developing between the two. Budowski was often overseas visiting countries that were part of IUCN to see what was happening and Nicholls was running the organization at home. The situation was that Nicholls rode roughshod over people; he was very inconsiderate in his dealings with the staff. Without the staff working enthusiastically and hard, things were just not going to happen. Without constant attention to the relationships with World Wildlife Fund there wasn't going to be any money available. It was just a lot of things that were all coming together at the time of the general assembly in Zaire. I was really not aware of the problems until the plane trip down to Zaire from Brussels, when everyone started coming up and talking to me and telling me what was going on. There was a really bad feeling throughout the entire staff. You could say that some people were terrorized by Nicholls. They just felt that they were going to be fired at any moment. He did fire a number of people, including most of our millionaire support from Switzerland. You don't snub the person who's about to give you a million dollars.

Jarrell: You don't bite the hand that feeds you.

Dasmann: No. Don't insult him. We hit Zaire and partly it was the conditions there that made it bad. General and Supreme Commander Mobutu Sese Seko[10] and his troops were everywhere. We went to the conservation meeting and had people wandering around with Uzis and camouflage uniforms, taking our cameras. It was dreadful. The bus driver was taken out and shot at the end of the trip. Anyway, what really then brought it to a head was that Mobutu and company decided that there wasn't going to be the opportunity for everyone to go on a field trip, and that just the leaders, the director general and the deputy director and the officials and the most important people, could go on the field trip and everyone else would stay at home.

Everyone stayed at home and then began talking about the problems and generated the feeling that things had reached a crisis point and that the staff would have to take some action. The secretariat was really out of hand. So they decided to have a general strike to stop work unless Budowski stepped down as director general and Nicholls as deputy director, and a new director general be brought in.

In the meetings that were going on among the staff it was decided that I should be the one who took the lead on it and told Budowski that he'd better not run for re-election, that he step down and let someone else take the helm. Of course Budowski didn't take that very well when he came back. It was a total mess with everyone on the secretariat being hauled in and questioned by the executive board. Finally a decision was reached that Budowski not run for re-election and the whole thing would have to be re-organized after we got back to Switzerland. Oh, I should point out that at one point the Zaire group offered to throw all the staff in prison, which of course they could have done. We were very relieved when we got on the plane and took off out of there.

Jarrell: Pretty crazy place to have your meeting.

Dasmann: Yes, it was bad. We would sit in a restaurant in the evening and watch the rats running around the wainscoting. Just a stream of rats. Anyway, when we got back to Switzerland, Donald Kuenen, who was president of IUCN at the time, convened a meeting of the executive board. He asked me to take over as acting director general with the agreement that I had no desire whatsoever to ever be the director general, but just to help us through this transition period I would be acting director general. I did that and realized then that what we were

going into in Zaire was that there was practically no money left. We had to practically beg the World Wildlife Fund to give us the money to meet the next month's payroll. It was a very difficult situation.

The final blow as far as I was concerned was that Kuenen and the vice president of the World Wildlife Fund, Luc Hoffman, came in one day, set themselves up in the office next to me and proceeded to bring in the staff, one by one, and told them to either agree to a 25% pay cut or they'd be gone. After running through the whole staff they called me in and did the same thing with me. I told him that I regarded what they were doing as completely uncalled for and insulting and just the wrong approach, to have me sitting there as acting director general and not even telling me that they were doing it. I told them they could take half my money immediately. I'd give them half my salary and my whole salary as soon as I finished the projects I was working on they could take it and shove it. It was the first time I ever told anyone to take this job and shove it. So I resigned as of then as acting director general. I stayed around for another six months or so getting things wound up, but turned the director generalship over to Duncan Poore as of that day. I had run the whole thing democratically; I had staff meetings where everyone was involved and tackled our problems.

Jarrell: So you were acting director general for what, about six or eight months?

Dasmann: Six months. It was really crazy. It's hard to believe.

Jarrell: So then what did you do? You said take this job and shove it.

Dasmann: I resigned as acting director general. I told them that as soon as I finished my projects I was out of there.

Jarrell: So there you were in Switzerland, you and Elizabeth. How did you decide to go to UC Santa Cruz?

Environmental Studies at UC Santa Cruz

Dasmann: I had two opportunities. Arnold [M.] Schultz, an ecologist on the faculty at UC Berkeley, told me that they wanted to bring someone in to head an environmental studies program there. Dick [Richard A.] Cooley told me there was a similar position at UCSC. I weighed the opportunities and decided I preferred UCSC to Berkeley, which was a very wise decision, as it turned out.

Jarrell: How did you know Dick Cooley?

Dasmann: He had worked with IUCN on a project on Alaska on polar bears. So we got together on that. I'd met him back in Washington, D.C. The Conservation Foundation was supporting him.

Jarrell: Did you know anything about UC Santa Cruz?

Dasmann: I'd read about it. I also heard about it from Dick, from a number of people. It was a new program, a new campus, new everything. It sounded great. So I decided I'd prefer that to Berkeley.

Jarrell: What were the circumstances surrounding your appointment at UCSC?

Dasmann: There were about a hundred applications for the job which they gradually whittled down to a few people, and then to a smaller number. Finally it was Sidney [J.] Holt and me going into the final round. I got together with Sidney Holt at a party and told him, "You said you don't want a full-time job; I don't want one either, so why don't we just each take half of the position and that way you can teach for a quarter and I'll teach for a quarter."

He was a marine biologist, a leader of Save the Whales. He was on the International Whaling Commission and had a lot of influence in the marine world generally. He was Ken[neth S.] Norris's favorite for the position. When we combined forces at the time, Ken was chairman and he sold the idea to the administration that they split the position in two parts.

Jarrell: That's such an unusual, unconventional approach, that you and Holt got together and kind of divvied it up and said let's go for it for a senior position.

Dasmann: Yes, it was a full tenured professor position. Underneath it all they wanted someone to take over as chair of the environmental studies board. But that wasn't a requirement at the time. Anyway, that was fun. We won the position. Unfortunately Sidney Holt didn't bother to show up once it was his turn.

Jarrell: Show up for what?

Dasmann: For work! He stayed over with FAO in Rome and didn't bother to come to teach his quarter. So I ended up with the whole thing. He did teach, you see. He taught one quarter. He got all this student enthusiasm going for marine affairs and all kinds of things started and then he didn't show up for the next

round. I inherited all of his enthusiastic students, except I didn't really know what was going on. But at any rate, we all survived. It was an interesting time. But I did have to go off half-time and onto full-time, which was good from the financial point of view, I guess.

Jarrell: What was it like coming to Santa Cruz in 1977? What was the state of environmental studies when you arrived?

Dasmann: I thought things were pretty good. I thought it was working pretty well. Originally, the college system [Dean E.] McHenry set up brought people together from all the different disciplines. College Eight, where I was, was being pushed forward as the environmental college so we had a variety of people there whom we could talk to and draw on, potentially. But at the same time, there was the fact that we sat within a university that was much bigger than we were, with a long history and very strongly entrenched bureaucracies. The real power was with the departments and the deans. The college provosts had virtually no power when it came down to the crunch. Gradually that original idea deteriorated and everything went back to the usual publish or perish regimen; that faculty should stay in their disciplines and forget about teaching interdisciplinary college courses. I thought it was wonderful when I came but it gradually changed. I don't know what's happening now. When I finally retired, I retired. I haven't tried to keep up on goings-on.

Jarrell: What was it like to come back to university teaching, to a scholarly setting, after having been out in this other world for such a long time?

Dasmann: It was wonderful. Particularly the students at UCSC are so enthusiastic and interested, and working with them was a pleasure. It always was a pleasure. I enjoyed it more each year. My last year was my best here. I had wonderful classes that final year. Of course knowing that I had to retire, because it was mandatory. At seventy. I could relax and enjoy the course.

Jarrell: What did you teach?

Dasmann: The moment I stepped in I got handed the beginning ecology class, which had an enormous number of students but had no TA or any assistance. That caused me a bit of a problem since there were well over a hundred students. I had an interesting time trying to deal with that, particularly trying to organize the students into smaller groups, and get them out in the field a bit to look at what we were talking about in class. But it worked. Then I got to teach wildlife

conservation as a prize. Gradually I worked into a course on ecodevelopment based on my ecological principles for economic development book. It was an interesting opportunity to come back and get into a university setting again.

I set up an ecodevelopment program that is still going. It is based on ecological principles for economic development, an international model that involved the U.N. and other agencies. That just irritated the hell out of the political scientists who were dealing with international agencies and had that as a focus, dealing with these issues and coming from a different point of view entirely.

Jarrell: How do you know it irritated them?

Dasmann: Well, I heard about it. From the students. I had spies all over the place.

Jarrell: So you would have a student in environmental studies who would be taking a class in ecodevelopment and learning about all of these international entities, governmental and non-governmental, and you would get this scuttlebutt back that some political scientist was questioning people in environmental studies?

Dasmann: Yes. Questioning our credentials since we didn't have degrees in politics. The economists always gave us the hardest time. We had our friends in the economics department, but most of them didn't like us very well. Some faculty thought that environmental studies trampled over the other disciplines.

Jarrell: Did you have any allies among the economists?

Dasmann: Yes, we had some. Jim [James R.] O'Connor was one of them. And we had friends in sociology. We survived.

Jarrell: Who were the people with whom you connected most strongly in environmental studies?

Dasmann: Well Dick Cooley was closest; he and I worked together very well and we seemed to think along the same lines on many issues. But beyond that it was a good bunch. I liked teaching with Paul [L.] Niebanck, who was off on the philosophical, ethical side of things. When we co-taught a course it could be an interesting exercise because we could argue about everything quite easily. But we did have a good time. Then Jim Pepper, who was coming in from the planning and urban development side. There was Bryan [H.] Farrell, who was a New Zealander and very interested in the South Pacific which fitted my interests

as well. Who am I leaving out? It was a good bunch, all of them. There was some problem there with Ken [Norris]; I never could figure it out and I never will now; I would have liked to have worked closely with him but it just never happened, somehow. We went by each other. It was difficult. I don't know why.

Jarrell: In those early days, in the 1970s, environmental studies at UCSC was policy-oriented, social-science oriented, and less scientifically oriented.

Dasmann: It did have that reputation because it was trying to do something that hadn't been done, as a rule, to bring economists, political scientists, all of them together, and to relate them to the ecological side of things and try to build something from that combination.

Jarrell: What did you think of that?

Dasmann: I thought it was great. It's what I had been doing with IUCN, so it was great while it lasted. It's still good but there are now different players.

Jarrell: When did Michael Soulé join the faculty?

Dasmann: During my last year, 1988, Soulé came. It may have been 1987, but it was right in there.

Jarrell: Did you have anything to do with his appointment?

Dasmann: I talked him into applying. I met him at a meeting of the Society for Conservation Biology at UC Davis and told him we had a job. It was a good position and I told him to come on down and put his oar in. He did and ended up in a neck-to-neck race with Robert Goodland of the World Bank. Goodland was a cultural anthropologist. It went right down to the wire. But when Goodland inquired about the salary and learned what a full professor was paid at the University of California, he couldn't believe it.

Jarrell: Because it was so low?

Dasmann: Yes. He was getting fifty percent more, I guess, at the World Bank. He then withdrew from the race and Soulé had a clear field. I think Soulé would have gotten it anyway.

I think we needed Soulé here at Santa Cruz. He reestablished the connection with the biology department and was the one who finally succeeded in establishing our graduate program in environmental studies, which we had tried unsuccessfully to get through. He did all the right things, talked to the right

deans and the right vice chancellors to mount a graduate program.

Jarrell: So he restored the connection with biology.

Dasmann: He strengthened the scientific dimension.

Jarrell: Had you tried to do that? Did you see that that was a definite need?

Dasmann: Yes, I saw it as a need but I was not the right person to do it.

Jarrell: Why weren't you the right person to do it?

Dasmann: I hated dealing with the administration. Oh, it was so maddening, particularly when I was provost. I finally realized that being provost was being house mother. The position had no authority or ability to do anything.

Jarrell: Why did you become provost?

Dasmann: I got talked into it. At the time, the provostship at College Eight was linked with being the chair of environmental studies and that part I thought was important.[11] Most of my energy went into my job as department chair and not into the college. The provosts all got together to decide what color the couches should be, you know?

Jarrell: Michael Soulé did not stay here long. Why did he leave? He's such a renowned figure.

Dasmann: He left because he had reached a point where he could do what he wanted to do. He took advantage of the early retirement that the University offered to try to get rid of all these full professors that were hanging around. He was able to move back to Colorado and concentrate on the things he was interested in, research he wanted to do which he could do better back there than he could do here. I didn't see any problem about his leaving. Practically the whole senior faculty left when they got early retirement and we lost the whole pack of them. Now they've got all new kids in there and it's not the same world that we had before.

Soulé did two things. He put a very strong emphasis on biology and got students to do double majors [in environmental studies and biology]. He built a strong base for the graduate program and succeeded in that so there is now a doctoral program. But the doctorate program came in just about the time everybody who had any experience with the institution here had left.

Jarrell: What did you think of Soulé's approach of encouraging students to have double majors?

Dasmann: I think that was a good idea. I used to do it, too. He was very strongly building the conservation biology part of the program and neglecting, pushing to the side, you might say, the social science side of the program.

Jarrell: Do you think students need both?

Dasmann: Yes. I think that the environmental studies program was based on the idea of bringing together these different points of view and studies. You can publish all the scientific papers you want and they'll be read by the people who read the scientific journals. But they'll go nowhere in the outside world. You have to get into the politics, sociology, and economics of the whole situation to begin to accomplish things.

Jarrell: Huey Johnson and Steve Gliessman both said to me, I think they're referring to the same thing, that the environmental studies board as a whole, retreated "from the reality of Ray's approach." Steve Gliessman, I think, alluded to the same thing, when he said that before you retired, "Ray got frustrated. It was hard to get people to listen. But he didn't pass this on to the students." You never inflicted or burdened the students with the fact that there was something going on in the background. I guess it was sort of the approach to the subject, which is inherently interdisciplinary.

Dasmann: Interdisciplinary, definitely. I didn't talk to the students about the troubles with the administration, arguments. But I remember having to escort [Chancellor Robert] Bob and Karen Sinsheimer through College Eight at a time when the students were in full revolt. I had to lead them through this pack of students to get them to the meeting room where we were all going to talk about the future of the program. The students were so incensed with the way things were going, the fact that there were threats to the environmental studies program which was their reason for coming to Santa Cruz. Oh, it was interesting.

Jarrell: So, why was the chancellor over at College Eight having a meeting on the future of the environmental studies program? That's sort of unusual; usually one goes to the chancellor; the chancellor doesn't come to you.

Dasmann: He was interested in defusing the whole crisis. He came to an informal gathering with us. His wife and my wife were there. It was definitely a

move by him to get better acquainted with us, with the environmental studies bunch. That's the way I remember it.

Jarrell: Steve Gliessman said that you were very frustrated with the University administration, as you've talked about. So there was an explicit effort to dismantle the program?

Dasmann: Yes. An outside review team appointed by Dean Frank Childs included no one favorable to the program.

Jarrell: I didn't know that environmental studies had come so close to being obliterated.

Dasmann: It did.

Jarrell: It was such an innovative program. You're right that people came to UC Santa Cruz specifically for that program. The word got out.

Dasmann: It really did. We had students in large numbers with majors in environmental studies. So we had arguments in favor of strengthening the program and adding faculty, but there were those who did not want to see that happen. It was very unfortunate.

Jarrell: Huey [D.] Johnson told me when his son, Tyler, went to UC Santa Cruz that Johnson became very interested in this dream he had, that the environmental studies board, now department, at UC Santa Cruz, could become the national prototype for environmental studies endeavors.[12] Were you aware of that? He'd come down to the campus and talked with Chancellor McHenry.

Dasmann: And then to [Robert L.] Sinsheimer. It was during the big controversy over whether environmental studies should exist or not, and the disciplinary folks were always after the weak areas, as they considered them, in the curriculum and the catalog, the areas that didn't have a good substantial base in disciplinary history, going back to the Middle Ages. So it was an interesting time trying to defend the environmental studies program against the onslaught of the disciplinarians. Well, we won. We kept the program going.

Jarrell: And there was some doubt about that?

Dasmann: Very much so. We were using up FTE, you know, full time equivalents. Some would have liked to have shut us down. But we had enough support to survive. I think one of the key people, as I recall, in that controversy,

was Alfred Heller, who was very strongly on the side of the environmental studies program. He was an old pal of Huey Johnson's. He gave a lot of money to UCSC so people listened when he barked. He was a strong supporter of the agroecology program which they really wanted to do away with.

Jarrell: Who were they?

Dasmann: The opposition, the mysterious people known as administrators, deans, vice chancellors, all that lot. It was a very tense time. It helped that we had moneyed people backing us, so we managed to get Steve Gliessman's agroecology program established. It was a definite feature of the Farm and Garden.

Jarrell: I don't know about how that got ensconced. I know that Steve holds the Alfred E. Heller Professorship in Agroecology, an endowed chair.

Dasmann: Yes, he does indeed. You see that's another thing. Heller came up with that endowed chair for environmental studies and agroecology. Alan Chadwick, an English dramatic actor, founded the farm and garden here, particularly the garden. He was a sort of moon-beamish type who flowed off into outer space at a moment's notice. He was very keen on planting according to the phases of the moon and that sort of thing. He taught the French intensive, biodynamic method, from Rudolf Steiner. Anyway, he brought all that to the campus. McHenry brought a number of faculty from England, as part of his Oxford/Cambridge concept for this campus.

Anyway, Chadwick was someone they wanted to "get," the deans and others; they couldn't stand Chadwick. But as long as McHenry was chancellor, Chadwick was in. Once McHenry left, there was a feeling against Chadwick, that the farm and garden was full of hippies doing weird things, not an asset to the campus at all, the disciplinarians felt. Anyway, Steve Gliessman came and received support from Alf Heller and other foundations to start the agroecology program.

It was a scientific discipline based on organic farming techniques being implemented in the farm and garden. It really helped environmental studies to survive the outside review of the program when they brought faculty from other universities. They brought in a guy who was just determined to eliminate us. At that time we had a dean who hated us, too. It was really a terrible time. Fortunately, or unfortunately I should say, I was provost of College Eight at that

time. I happened to like Sinsheimer. My wife liked Mrs. [Karen] Sinsheimer. We got along. We survived that one.

Jarrell: Was Chancellor Sinsheimer in favor of or supportive of environmental studies?

Dasmann: Yes and no. He could go either way. He would never be what you'd call really supportive, but he would be at least neutral. He wasn't against the department. I think he was impressed with some of the work some of us did. So it was an interesting time. I wouldn't want to relive it.

Jarrell: What was the nature of the criticism of environmental studies?

Dasmann: That it didn't have its feet firmly in a discipline; it wasn't biology; it wasn't sociology; it was a mixture of all these interacting things, kind of like planet earth. So we didn't have a firm disciplinary base in the University structure. The external reviewers stressed that we needed to have a stronger scientific base in environmental studies.

After the review was finished I resigned as provost. I had split the provost position off from the chairmanship of environmental studies. I had resigned from both at the time. They said the only way to save the program was to put Gary Lease in as chair. He was from the religious studies area; history of consciousness was his main base. At any rate he was brought in as board chair with the idea of establishing the environmental studies program with a stronger base and remodeling it to fit the image of the campus at the time. I like Gary Lease. He was a good guy to have as board chair. He was very effective in dealing with the opposition. He became strongly in favor of our program and defended it very well. He did as much as anyone to guarantee the survival of the program.

Jarrell: How did they pick somebody from so far afield?

Dasmann: They thought he was a good administrator.

Jarrell: I can't think of another example in the history of the campus where somebody from the humanities has been brought in to head a board in the social sciences on that basis.

Dasmann: I don't know of any either.

Jarrell: But he turned out to be an ally?

Dasmann: Yes, he was a hunter and fisherman and I got along with him right

from the start. He was the sort of person who would come and talk to me or to the faculty members involved and see what they were up to and not be judging from a distance the way that people had been doing before his arrival. No, he pulled us through. My teaching was very satisfying; I liked the teaching, I liked dealing with the students. I liked all that. I hated the administration and dealing with hostile chancellors and deans. It seemed like such a waste of time.

Jarrell: So this was the old crew on board. And Gary Lease became board chair. You must have made a case so that you won out in the end.

Dasmann: Yes, we did. Well anyone who really knew what was going on would be in favor of us, I would think. We weren't flakey.

Jarrell: Steve Gliessman had the highest praise for your teaching and relationships with students. He said you took on more senior thesis advisees than anyone else. He thought you were an incredible listener and mentor to students; that they flocked to you and you took on a really huge responsibility in addition to everything else.

Dasmann: Yes, that's probably true. Dick Cooley and I had most of the senior theses.

Jarrell: Was that a requirement in environmental studies, that every student had to do a senior thesis?

Dasmann: Yes, it was.

College Eight

Jarrell: Tell me about your provostship at College Eight from 1981 to 1984.

Dasmann: College Eight was established as the environmental college, an interdisciplinary focus.

Jarrell: You said it was like being a house mother.

Dasmann: So much trivia. We were no longer allowed to set up programs, to bring in people, to have lectures and activities going on because you don't get any points towards tenure or promotion from doing that. You have to be over in your discipline and be disciplinarians and do research that people in the discipline will read about, maybe.

Jarrell: The provosts no longer had any academic or intellectual ballast; that had been stripped away?

Dasmann: Yes. It used to be that the provost of the college was a key person on the campus. Not after the great change.

Jarrell: How would you assess the quality of the environmental studies department as an undergraduate program during your tenure?

Dasmann: I would say it was very good. I think environmental studies gave the students a very valuable background to go on with. Our students got placed in all the big universities for graduate studies. They didn't have any problem with that; they went to Harvard and Yale, from the Ivy League to Michigan and Wisconsin.

My concern from the start was that we didn't have any regular follow-up of what happened to our students or have real assistance in finding them jobs if that's what they were after; in helping them to make the jump into whatever future they had in mind. I was used to the Humboldt State approach, which was very oriented towards helping students get out there into employment in the field. We would maintain relationships with the California Department of Fish and Game, the Fish and Wildlife Service, the U.S. Forest Service—all the government agencies, and try to keep on top of the employment field. But the University of California didn't do that. In fact, I think there would have been strong opposition to our doing it. So it was up to individual faculty members to try to keep an eye out on what was going on and where the jobs were and what the opportunities were. There wasn't any central core of information for the students.

Jarrell: Do you think it might have been that Humboldt State had a much more applied curriculum? Maybe it was a little more theoretical at Santa Cruz?

Dasmann: Yes, it was more theoretical and more wide-ranging and less oriented toward the needs of the employers, or companies or whatever.

Jarrell: Would a student graduating from UC Santa Cruz with a bachelor's degree in environmental studies be equipped to go out and do resource management?

Dasmann: Yes, I think so. They may be a little weak on the field techniques, but those are quickly learned. They have the basis of understanding to go out and to make a name for themselves and many have done that. Particularly we've

encouraged them, when I say we, I mean really it was Dick Cooley and me, to begin with, to get out there during the summers and work at temporary jobs with the National Park Service.

Jarrell: Internships?

Dasmann: Yes. They became seasonal employees with the forest service. They'd get out into the field and get an understanding of the agency and get their names known and build up a little background before they graduated. Then it would help if they had a thesis that was related to their long-term interests and not just an exercise in academia.

Jarrell: So something that would be a piece of real, applied field work, not just, as you say, academic.

Dasmann: Not just textbook.

Jarrell: Well that's very interesting. So you and Dick Cooley were very helpful to students in this way.

Dasmann: And Ken Norris was. Very strongly. He got them out into the field more than anyone did.

Jarrell: But there was never a concerted effort amongst the board?

Dasmann: Well there was no opportunity to centralize the information so that individual faculty members didn't have to be trotting around to the agencies. Jenny Anderson with her internship program did a lot for that. She was very good at finding summer placements for students so they could get field experience. But she did it because she did it. It wasn't something the University set up for her to do. It was her inclination. Over the years our students went to Washington, D. C., as congressional interns and with their backgrounds in environmental studies, did well. I think the program was oriented in the right direction. I trust it still is.

Jarrell: You started out today saying, sort of tongue-in-cheek, that the legitimacy of a discipline is based on tracing its genealogy back to the Middle Ages. Here's this upstart, environmental studies, with no bona fides from the Sorbonne, or whatever.

Dasmann: In essence we were being asked where were we when Oxford was founded.

Jarrell: Environmental studies pre-supposes, implicitly, the joining together of rigorous science, on the one hand, and the social sciences on the other. Do you think that might have had something to do with the animosity with which environmental studies was faced?

Dasmann: I'm sure it was.

Jarrell: Because it really breaks the old ivory tower mold.

Dasmann: Well we certainly damaged it. I don't know if we broke it. You know, the world is a complicated ecosystem and it doesn't fit a discipline. You have to come at it from different angles. You have to consider the people there and how they're reacting and you have to look at the wildlife and the vegetation and the oceans and they don't lend themselves to disciplinary approaches. The disciplinary approach is important in having your facts straight, in knowing what's going on in this area or that area, but that doesn't lead you to a solution to these problems. You've got to have the whole spectrum of human knowledge applied to the problems that we face almost on a daily basis now; from global warming, to the breakdown of the ozone layer, to the state of the world's fisheries, the future of whales, the survival of endangered species on land, to the spread of deserts—all of these things. You can't just go and publish a paper in your field and get your promotion, if you want to keep the planet functioning. You've got to be able to put your knowledge to work and it means that you can't just do biological research. You've got to do conservation biology oriented towards the solution of problems and not just to the study of what those things are. I guess that's where we run into so much difficulty. The University has tended to reward people according to the scientific validity of their studies, which is fine, but it doesn't aim at solutions to problems. That has to always be set up outside the University in the political realm. When you try and bring the information needed to begin to resolve some of the difficult problems we're facing on the earth today you run into opposition from those who feel threatened by what you're doing.

Jarrell: Well it's an interesting direction you've moved us in. We have the ivory tower, university academic life, and it's not good enough, you say, for somebody to publish their little paper on the sand dunes, or their little paper on this or that. You're interested in what is to be done; how is a research paper going to fit into the larger mosaic, unless you want to have a museum filled with birds that once

lived in the rainforest.

Dasmann: That's almost the way it is.

Jarrell: So what are your thoughts about crossing that line from academic life to the world? I think what you're saying is there has to be some kind of a joining together of these two aspects?

Dasmann: Definitely. There's room for the person who doesn't want to have anything to do with the political/ social situation, to do his studies and find out what's happening with whatever it is he or she is studying. But there then has to be someone who will take the results of those studies and put them into the public arena, where they will lead to action eventually at some point. For instance, it takes a really high degree of technical skill to determine what's happening to the ozone layer.

Jarrell: But let's say the data is out there in the public realm, on the web, in all of these journals, okay? I don't have the expertise; I don't have the background to make sense of that. So we do need scientific expertise. I think we've kind of demythologized science so that it's not like the guys in the white coats any more. I think there's more skepticism. But the scientists have to be able to interpret this stuff to the public. Because I don't have a Ph.D. in meteorology or in physics; I don't understand this stuff, but I can understand it if a good science writer presents it to me.

Dasmann: There you've got it. There has to be that link, those people who will interpret the findings of pure science over here so that the people out there who have to do something about it will know what they're talking about. That's something that many academic scientists just don't know how to do. They don't know how to get information out. They write technical papers which can only be understood by people with the same background as they have and don't register at all with the general public, or even the well-informed active public who are concerned about a particular issue. If the study is presented in such a way that it is unintelligible to the people who will ultimately have the responsibility for doing something about it, then it's sort of a waste of time in one sense. I've always felt that scientific papers should be written in such a way that someone who's not a scientist has a hope of understanding them. Otherwise I don't know why they should be written at all, in many cases. So much of what goes into the literature is obscure, obtuse, whatever. It's very difficult for anyone outside a

field to understand what is going on.

California Fish and Game Commission

Jarrell: Today I'd like to talk to you about your appointment to the California State Fish and Game Commission. You were on the commission from 1978 until 1983,, when Huey Johnson was Secretary of Natural Resources for the state. How did you come to be appointed to that commission?

Dasmann: It was Huey Johnson who hooked me up with Governor Edmund G. Brown, Jr. I met Jerry Brown and talked to him, but I don't think he registered that so much as Huey Johnson's recommendation. I then met with the Governor on several occasions.

Jarrell: How did Huey Johnson come to appoint you?

Dasmann: Well I've known Huey since he was with the Nature Conservancy in California. Then I'd known him back in Washington, D.C., when I was with the Conservation Foundation.

Jarrell: What was he doing in Washington, D.C.?

Dasmann: He was the regional director in charge of the Nature Conservancy; I'm not sure what his title was, but he was back there representing them. When I came back from Switzerland to California he got me to give a talk to the people in government up in Sacramento. I don't remember the details but he arranged for my appointment.

Jarrell: Tell me about the California Fish and Game Commission. What is its charge?

Dasmann: Essentially, in theory at least, it sets the laws and regulations governing the use of wildlife in California, such as hunting seasons, bag limits and all that kind of thing. Closing down a stream to fishing to enable the fish to recover there while they have other streams open. Areas that are closed. Areas that are open. Whatever needs to be done. Actually a lot of it is done directly by the legislature, although, theoretically the Fish and Game Commission should do it. When something becomes politically hot, you know, the legislature takes it over.

Jarrell: It was a political appointment during a Democratic administration. Who

were some of the others Governor Brown had appointed or were left over from the previous administration?

Dasmann: There were some. For example, Ike Livermore was a holdover from the previous administration. But the others, well, when I first was on the commission there was another person there who was a holdover from the previous administration, too. But then he left and I think everyone then had been appointed by Jerry Brown or endorsed by Jerry Brown, in the case of Livermore.

Jarrell: From what you knew of your predecessors on the commission, would you say that there was any kind of a significant shift in the approach to fish and game management and stipulations? A different point of view, let's say.

Dasmann: Well, yes there was. There was a shift in the sense that there were two people with scientific backgrounds appointed, me and Elizabeth Fenwick who was from Scripps. So there was the capability in the commission itself to get scientific advice and to, at times, argue with the Department of Fish and Game about what should be done or not done. Usually though, the recommendations of the department were approved by the commission. The commissioners didn't have the time to do the research and the information-gathering that was needed to really sit in judgment on the recommendations of the department. It was only when things became quite controversial that the Fish and Game Commission might overrule the department. The authority was with the Fish and Game Commission but the information was with the departments so you had that conflict. If things got too hot the legislature would inevitably move in on you. I had bright ideas about changing things and making it more of a scientifically-based commission, but it became pretty obvious that changes were going to come very slowly, if at all. The way things were set up there were just too many checks and balances.

Jarrell: In terms of controversial issues, what about salmon? That would be under your jurisdiction.

Dasmann: That would be under our jurisdiction in part. But since they were migratory fish, they'd get in federal waters and become the concern of the federal agencies. But we on the commission would have the ability to negotiate limits or closures or whatever we thought was necessary to protect the salmon.

Jarrell: What were some of the other areas that you were concerned with?

Dasmann: I remember, for example, the most controversial thing we dealt with while I was on the commission was the condor issue, whether or not the remaining condors should be captured and transferred to breeding facilities at San Diego and L.A.

Jarrell: There were about fourteen pairs left?

Dasmann: Something like that. Not very many. The numbers were declining pretty steadily. When I heard all the arguments finally I felt the only thing to do was to put them in captivity and try captive breeding, which has been successful now. At the time, though, it was very controversial.

Jarrell: Why?

Dasmann: Because many felt that the condors should be left in the wild, left alone, and that we should pay much more attention to their habitat; protecting their habitat and using whatever was necessary to make the places that condors remained in more suited to them, by eliminating, for example, the use of pesticides and poisons; by instituting controlled burning to increase deer populations so that there would be something more for the condors to feed on; by generally changing land-use practices to favor condors. Of course that got us right into the whole issue of land-use practices and who was in charge of what and how to influence landowners to do something nice for condors. The immediate, expedient way of saving condors seemed to be to get them into captivity and breed them and if they were successfully bred then try to introduce them in the most suitable areas. Not giving up on the idea of improving things generally within the condor range. But working more practically with what could be accomplished in the immediate future.

Jarrell: So really the decision about which way to go, whether to improve the habitat and the environmental conditions, and let the condors fare on their own, or to do a captive breeding program, was under the aegis of the Fish and Game Commission?

Dasmann: Yes and no. Again nothing is ever where you think it is. Because it is an endangered species it was under federal jurisdiction also, with the U.S. Fish and Wildlife Service in there. Right there you had potential conflict between the California Fish and Game Commission and its experts, and the Fish and Wildlife Service and its experts.

Jarrell: Was there conflict between the two?

Dasmann: There was disagreement initially, which was finally resolved. But yes, some of the state scientists disagreed with some of the federal scientists and there were arguments back and forth. And then the non-governmental organizations like the Audubon Society, which was very heavily involved in this at that time too.

Jarrell: What was the Audubon Society's position?

Dasmann: As I recall they went finally with the federal position, which was to get the captive breeding program going. The state finally went along with that, too.

Jarrell: Just from what I've read, it's been quite successful; they've even introduced condors now into Big Sur.

Dasmann: Yes. Into the Ventana Wilderness. The only trouble with condors is they don't necessarily stay put; they can take off and before you know it they're three hundred miles away.

Jarrell: Huey Johnson said to me that he was too busy to keep a close watch on the Fish and Game Commission. He had a big plate, lots of stuff going on. So day-to-day he was really not paying that much attention. He said that the Brown Administration did put together a plan. Got outside consultants. I guess this was pre-planning before the administration came in. As it started off they had a bunch of priorities in the Department of Natural Resources. I don't think that there had been a particularly environmentally-conscious group of people in the state government prior to that time?

Dasmann: That's right. There was a lot of feeling among some of the older people that "environmental" was a bad word. They'd say that they'd always been wildlife conservationists and didn't need this environmental stuff out there at all. There was a lot of resentment among the older hunters and fishermen who always felt they were taking pretty good care of the wildlife themselves. They didn't need a bunch of screaming hippies telling them what to do.

Jarrell: Do you think that there was a marked policy change during that period that is at all lasting? Do you think there's a legacy?

Dasmann: Yes, I do. I think a lot of things have happened that have been quite favorable, now that the administration is again more inclined to do

environmentally appropriate things. There is the opportunity to build on what was accomplished back then. It's more a change in attitude, of better information being made available to the public, and the public taking more of an interest. The environmental movement grew and developed in the sixties and seventies and carried on from there. I must say that there was an effort to reverse this trend, under [Governor George] Deukmejian and then to some lesser extent under [Governor] Pete Wilson. But they didn't succeed in reversing it totally.

Jarrell: In Monday's *San Francisco Chronicle*, there was an article in which California was listed as the state with the most diverse habitats. The article was about the ancient forests of old-growth redwood.

Dasmann: Particularly in the Sierra.

Jarrell: Yes, exactly. Maybe you read the article?

Dasmann: I did.

Jarrell: Okay, and also the Mojave Desert. And the heart of the matter is always, okay the people put out this report, I can't cite it exactly, and then the head of the Farm Bureau said they were great stewards of the land and this is just a lot of blather, a lot of hue and cry. And really, there's nothing to be concerned about. They were talking about that whole area up in the north state, between the Oregon and California borders.

Dasmann: The Siskiyou Mountains and Klamath River watershed.

Jarrell: Yes, which is a huge area for migrating birds. There's a lot of farming there and pesticide run-off. The head of the California Farm Bureau said he didn't think they were being given enough credit for their stewardship in preserving this land. And at heart, of course, is the economic interest.

Dasmann: Yes. Well I haven't followed the antics of the Farm Bureau, but I see the use of pesticides alone, which continues, despite all the regulations and whatnot. I mean methyl bromide on strawberries, for example. Enough to make you wonder how we can talk about being good stewards of the land when we are poisoning things.

Jarrell: Having all that run-off.

Dasmann: Yes. Well the whole attitude toward production at any cost is bad, I think. No, the Siskiyou-Klamath area is one of the most diverse areas in the state,

and of course it extends up into Oregon, too. It's been deserving of much more attention than it's received, in the sense of putting a stop to the clearcutting of the forests and similar destructive practices. Because some of the small areas up there have more species of conifers and other kinds of trees than any place else in the United States. It's amazing country, too. It has so much of the serpentine vegetation, which is quite unique.

Jarrell: What is serpentine vegetation?

Dasmann: Well, serpentine is a colorful, greenish mineral and it has a nice slick feel to it, it splits off into smooth-feeling pieces of rock. The chemical composition of how it evolved is beyond me right now, but serpentine vegetation grows on the serpentine.

Jarrell: So the flora that grows on it has something to do with the chemical composition of the serpentine?

Dasmann: Let's say you're going through an ordinary redwood forest and when you hit the serpentine area there's a total change in vegetation. The redwoods will not tolerate it and instead you'll find other species growing there. So Del Norte, and Siskiyou County and southwest Oregon are full of those serpentine areas that are part of the reason for the unique vegetation they have. It's a fascinating country. I would like to have been able to spend more time roaming around those mountains. I think I first saw a wolverine there. I didn't know what it was at first, but gradually I figured out that's what it had to be, having seen movies of them in action and remembering what this critter looked like. You don't see them every day. They're very rare in this part of the world, but not so rare in Alaska or Canada.

Jarrell: When you say you think that that whole area has been neglected. By whom, or in what way?

Dasmann: It hasn't been protected sufficiently. There hasn't been enough emphasis on protecting the old growth forests there. There's been too much logging and clearcutting generally. Let's just say it needs more protection than it's been getting.

Jarrell: How would that happen? That it would get more protection?

Dasmann: Well, most of it is Forest Service land, so the pressure is on them to do more about protecting the old growth and I think they're going to come

around. Under the present administration they've got good leadership and I think they will do the right thing. But it's taken a lot of public pressure to bring that change, to make the Forest Service think more about environmental protection and less about board feet production.

Jarrell: You indicated that Governor Wilson was more environmentally conscious, that things weren't as bad as they could have been. Do you think Governor Gray Davis is going to revitalize the environmental concerns of the Brown Administration?

Dasmann: Well, I think so. He's already taking steps to make a change. He's appointed Mary D. Nichols as Secretary of the Resources Agency. Another woman who is very environmentally well informed is Andrea Tuttle, the head of the California Department of Forestry and Fire Protection. Those are two key positions in influencing forest practices, certainly, although that's at the state level and not the federal. The Forest Service is another story. But Clinton has put in some pretty good people in the Forest Service, too. I think things are looking up in that area

Jarrell: Is the federal-state relationship difficult? Or do they work in kind of a conciliatory manner?

Dasmann: Both, depending on the issue. There's always the states' rights feeling, those who don't want to see the feds taking away their territory, their jurisdiction. So there's a lot of that involved most of the time.

Environmental Organizations

Jarrell: I have a list of the different organizations with which you have been involved. Let's start with the Sierra Club.

Dasmann: I've never been as active as I wanted to be with them. When I came back here from Switzerland I volunteered. J. Michael McCloskey, I think was director at that time. But I never made a connection for some reason; I just couldn't get into their network. So I've been a nominal member, you might say, for many years, without being actively involved. By contrast, I went to Friends of the Earth, Dave Brower's group at the time. They swooped me right in and next thing I got on the board there.

Jarrell: When did you first meet Dave Brower?

Dasmann: Probably around 1950, at a wilderness conference. I remember having long talks with him on the island of Malta at a conference on the future of the oceans. I remember giving Dave advice, telling him not to mess with whales, that he should pick a more attractive animal. I thought that being in love with a whale is sort of like being in love with a submarine. You can't really work up any feelings about whales. I thought he should pick something cute and cuddly to make a campaign animal. So with that advice he started the program on whales which was a great success. People are in love with whales! I always give him the best advice. Fortunately he doesn't pay any attention to it. When I was in Washington, D.C., he was back there occasionally twisting Russ Train's arm. I forget whether Russ or I said that the thing about Dave Brower is he makes us all look conservative because he's so far out.

Jarrell: Brower was fired by the board of the Sierra Club, then went off and founded Friends of the Earth and then later the Earth Island Institute. You said you were on the board of directors of Friends of the Earth.

Dasmann: I was for awhile, right.

Jarrell: What was the focus of Friends of the Earth when you were there? Why did you participate?

Dasmann: I wanted to get involved with a major environmental nongovernmental organization to stir things up a bit, and do things that needed doing, working with them. At that time there were the Sierra Club and Friends of the Earth in San Francisco, and various other organizations as well, but those were the biggies, at least the San Francisco-based ones that were the most active. I didn't want to be traipsing back and forth to Washington all the time. I'd lived there long enough.

Jarrell: Who were some of the people on the board, some of the other folks in that organization that you connected with?

Dasmann: There were rather good people on the board at that time and I got along with them. Ann [H.] Ehrlich, Judy Diamond, Stephanie Mills, etc.

Jarrell: What was kind of the emphasis of Earth Island Institute as opposed to the Sierra Club?

Dasmann: Earth Island Institute was a later development which was a break-off from Friends of the Earth. A group within Friends of the Earth wanted to move

its headquarters to Washington and there was a big split in the board between those who wanted to follow Dave Brower's lead and stay in San Francisco and those who wanted to pull out and go to Washington where they felt they could be more politically effective. I stayed with Dave Brower because I wanted a San Francisco-based organization and also because I agreed with Dave on most things. I know he's inclined to go charging off sometimes without any money behind him but it works out. It doesn't make the fiscal conservatives very happy with him, the board or the people who are trying to keep the books balanced in the organization.

Jarrell: What were the issues during that period that engaged you?

Dasmann: I was interested in the question of indigenous peoples and their rights to maintain their traditional ways of life, based on hunting and gathering. Should they be in a different category from the recreation sport hunters and the technological society? For example, there was the question of whether the Eskimo and Inuit people be allowed to continue their [bowhead] whaling activity which is part of their culture; or should they be shut down like all other whaling enterprises?

They have a life built around bowhead whales. Of course there is a big difference between hunting a whale with a handmade harpoon and hunting a whale with a missile, essentially. You get into that sticky ground, but we had some interesting arguments and discussions and I was at that time in favor of the indigenous right to continue ways of life that are not harmful to the environment or to the long-term survival of the species. There were a lot of interesting issues going on during the middle-1970s.

Jarrell: Tell me about the Earth Island Institute expedition to Lake Baikal in Russia in 1991. How did that get organized?

Dasmann: It was probably a conversation between Fran Macy and Dave Brower that started the expedition. Macy was at that time involved in Soviet-U.S. relations, and trying to develop a better relationship between the two countries by bringing Russians over here and sending our people over there. He spoke Russian fluently and organized the whole thing. He is married to Joanna Macy who has written a number of books on dharma and development.

Jarrell: So this was an environmental facet of U.S-Russian relations?

Dasmann: I think that was the idea coming from this institute of Soviet-U.S. relationships. I had a somewhat different attitude, thinking of the biosphere reserves and wildlife conservation, but it blended together very well and there wasn't any problem. Lake Baikal is such an incredible place; it's the largest freshwater lake on earth; it is said to contain as much water as our five great lakes combined. The water was incredibly clear. You can see a great depth in it. It has many indigenous species that are only found there; there are hundreds of different kinds of fish and such that you don't find anyplace else, including a freshwater seal. It's a beautiful lake. We went from the south up to the north end in a hydrofoil, traveling hours on this hydrofoil, which was going at a high speed. And yet, it's so long. It's such a big lake. Oh, it's fantastic country. We were surrounded by wilderness, especially on the north side of the lake. But the problem was that there was a pulp mill and other things polluting the lake and God knows what else.

Jarrell: How did you get involved in this expedition?

Dasmann: John [T.] Knox, the executive director of Earth Island Institute, wrote and asked me to come. Dave Brower is chairman of the board. Lake Baikal is still in good shape but is being threatened more and more by industrial activities, particularly around the southern end of the lake.

Jarrell: What was the purpose of the expedition?

Dasmann: To bring a joint Russian-U.S. group to analyze the problems of the lake, to make recommendations and assist in any way Russian efforts to conserve this incredible biotic resource. Bringing in the experts from out of town is always better than calling on your home experts; we were the experts from out of town.

Jarrell: How many people were on the American team?

Dasmann: About a dozen from the Earth Island Institute. We spent at least a week at the north end of Lake Baikal and a few more days at the south end. I started out fine and did all right for the first part of the journey but then when we were at the north end of the lake I became ill and gradually developed pneumonia. I also had this incredible nasal hemorrhage which was not an ordinary nose bleed; I was losing blood at a high rate and lost a couple of liters at least. There was nothing I could do to stop it. They finally called an ambulance and they were there in about ten minutes flat. There was a doctor in the ambulance who got my nose packed all the way up into the sinuses. It might

have happened because I was in a helicopter and kept sticking my head out the window. I was watching to see a moose or bear down in the forest. So I was in this full blast of dry, cold air during the helicopter trip and that may have affected my breathing apparatus.

But it was an interesting trip. We went up from Lake Baikal into the forest wilderness north of Lake Baikal and had a chance to look the country over. Anyway, I was hospitalized there.

Dasmann: After the trip we formed Lake Baikal Watch, a joint Russian-U.S. organization with headquarters at Earth Island Institute here in this country and Irkutsk on the Russian end. That was the main accomplishment. It wasn't to report to governments or anything like that; it was forming an organization to help to fight to protect Lake Baikal.

Jarrell: What was the conservation consciousness of your Russian counterparts?

Dasmann: Well it was equal to our own, I would say. It was a very select group interested in saving Lake Baikal, hardly representative of the Russian scientific community.

Jarrell: Who were some of the folks who were your counterparts?

Dasmann: We had some from the political area and then a number from the University of Moscow. It was a mixed lot. Most of them were scientists in ecology.

Jarrell: In the area of environmentalism, conservation, how did you and your Russian counterparts get along? Were they like-minded?

Dasmann: We got along very well. There was no problem with that. We tended to see things in the same way. We had more access to a greater range of material than the Russians. But they had access to a lot of Russian material that we didn't have access to. So it probably evened out. I had noticed this before when I was working with IUCN and with the Russians there because their wildlife biologists would come over and being a wildlife biologist myself, it was just like talking to somebody from Canada or the U.S. The same problems, the same ideas, doing their best to protect the environment, and of course up against the same opposition and developers who want to get more economic benefit, more cash, out of the resources. Just exactly the same. Just change the hats and the Russians and the Americans would be the same.

Jarrell: That's fascinating!

Dasmann: It really was. Well, it is. Of course the damage that's been done since Yeltsin took over has been far worse, I think, than what was done previously.

Jarrell: Are you talking about Lake Baikal?

Dasmann: To natural resources generally.

Jarrell: So what you're saying is there is a kind of rampant capitalism, no holds barred.

Dasmann: Yes. Let the Mafia run the show. That situation.

Jarrell: What is the nature of Lake Baikal Watch?

Dasmann: Mostly they are trying to help strengthen the Russian organization and provide assistance to them in conserving the lake. Some of the people from our expedition went back to Russia after we had all come home and put in another year or so over there working with the Russians on developing a series of biosphere reserves and national parks around Lake Baikal. They needed help in getting them from paper into reality; in getting staff and equipment to protect these really wild areas. So part of the job was getting our people over there to help them with their problems and getting their people over here to get the benefit of whatever we had to offer in the way of assistance.

After Earth Island got this exchange going gradually the emphasis has shifted and now the headquarters over there is much stronger. I think the role of Earth Island is less important than it was at the start. But I've not been active in it in recent years. I know I definitely feel handicapped by not being able to speak or read Russian.

Jarrell: You just hit on the other thing that I wanted to talk about today, which is biosphere reserves. Man and the Biosphere was launched in 1971 and the Russians had identified and on paper anyway, established and identified different areas around Lake Baikal and also in other parts of their country.

Dasmann: Yes, definitely. They had a well-developed series of national parks and protected areas established well before the UNESCO biosphere reserve concept was involved. Their problem, of course, was always the same thing we have here, in a way, the money to finance the proper management and care of protected areas was usually not available. So they were fighting the problem of

never having enough money to do the job.

They had the scientific part charged with managing their national parks or biosphere reserves but they also had plenty of criticism coming from poets and writers talking about the glories of Lake Baikal. There's a whole mythology around the lake; it's very important from a literary point of view alone; it's a really sentimental thing for many Russians.

Jarrell: There is this dichotomy between the romantic, nostalgic, back to Eden vision, versus a sort of man over nature Victorian era point of view. So you're saying this was very well developed in Russia; that there was a literary and poetic association with that lake and that environment. So you had individuals who were saying we have to preserve this marvelous sacred sea?

Dasmann: It was a very emotional issue. I didn't really get a chance to talk to the local ethnic group because I didn't speak their language. These indigenous people north of Lake Baikal were essentially identical in appearance to the Sioux or the Chippewa, the American Indian. When they were talking it sounded as if Chief Seattle had written their speeches; the same feelings came through, the same speech. I don't know if they're the ancestors of the Native Americans but they certainly sounded like them. It was the same emotional attachment to the land and the forests and the water.

The greater part of the shoreline around Lake Baikal is part of the Buryat-Mongol Republic in the old system of autonomous republics. So you're dealing with Mongol people there far more than you are dealing with Russians. One of the fellows in our group, a forester, got quite sick at the same time I was getting sick and he insisted on traditional medicine. They brought a Mongol shaman, a traditional healer, who brewed up all these nasty little vegetables and cured him.

Jarrell: So these indigenous people provide a source of energy for this whole preservation effort?

Dasmann: Yes, we visited one of the early Buddhist temples in the Buryat Republic. It was quite fantastic. That got there before Islam.

Jarrell: Of course. There are just layers and layers of conquerors and religions there.

Dasmann: Yes, there is an indigenous core.

Jarrell: I had no idea of the similarities between Russia and the United States in

the various environmental conflicts.

Dasmann: I remember in 1974 when the biosphere reserves were being set up, the Russians and the U.S. were in a race as to who would get their biosphere reserves established first.

Jarrell: They were even competing over that!

Dasmann: Yes! I think they each had about 20 biosphere reserves. In both cases nearly all of them were already approved as national parks and it was just a matter of changing the title, that there were new things added. But yes, it was interesting to see that race for being the first with the most.

Jarrell: What has been your involvement with the World Wildlife Fund?

Dasmann: I was very heavily involved with the World Wildlife Fund because it and IUCN were partners and still are to some degree. They've always been closely related. When I was working for IUCN I maintained constant communication with the World Wildlife Fund people. I became particularly interested in what the U.S. World Wildlife Fund people were doing when Tom [Thomas E.] Lovejoy was the principal liaison there between the U.S. and Switzerland. So that got me going with that. Then after I left IUCN and was back here in California and teaching at UCSC, Russell Train invited me to be on the science advisory group and then on the board and then on the national council, after I'd done my two terms on the board, which was all that was allowed.

Jarrell: How many years would that have been?

Dasmann: Oh I guess, six, two terms. I think either six or eight. I think it was probably six. But then I was on the national council for another six years. So a total of twelve, I guess. I'm still in touch, of course, with what's going on with the World Wildlife Fund.

Jarrell: Tell me something about the U.S. World Wildlife Fund. What are its emphases? Is it still tied with the International Union?

Dasmann: It's not tied but it's still closely related to the international World Wildlife Fund, which is in Switzerland, and to IUCN in the sense of exchanging information and ideas; who is going to support what project and where's the money coming from, and so on. Its emphases may be different. For example, there's a tendency to stay with the countries that you know best. The U.S., because of its location, has tended to emphasize Latin America, the Caribbean

countries, rather than say, South Asia. Whereas the Dutch World Wildlife Fund would probably focus more on Indonesia, which was Dutch at one time. The British would be more involved with East Africa, South Africa. But it varies; there isn't any fixed rule. It's less that way now than it was when I first went to work with IUCN. Now whatever is the hot issue they can jump on for awhile and stay with it.

Jarrell: Do they do much in the United States?

Dasmann: A bit. But the emphasis is more away from the United States.

Jarrell: So it's more Western Hemisphere?

Dasmann: Yes, there are so many organizations working on the United States' problems that World Wildlife Fund may give a little support here and there but mostly they give support where it's badly needed overseas.

Jarrell: What were some of the areas and issues that you've been involved with?

Dasmann: I've been involved with a pretty wide range of things. Particularly with the African species because I've spent a lot of time there and I was interested in their protection and many other things. However, I was mostly reading project and program proposals and saying whether or not they were worth supporting. I was not doing field work.

Jarrell: What about the Wildlife Society?

Dasmann: I was president for awhile. The organization has you start in on the national council and then if you're elected you become president-elect, and then president and then past president. So you have a three-year term when you've got to be there for all the meetings. That was one of the first groups I became associated with, because it's a professional group for wildlife managers and that was my principal interest at that time.

Jarrell: For governmental organizations, mostly?

Dasmann: Both government and private. Some of these things are happening on the private side. I was president in 1970, the same year I went to IUCN, and then instead of being based in Washington, which was convenient, I had to commute across the Atlantic. I was actively involved with the Wildlife Society from the 1950s on, and I still am to some extent, although I am tired of going to meetings all the way across the country. These organizations don't necessarily get along all

that well together. You'd think they just freely exchange information and get the best solution to things. But there's a lot of antagonism and suspicion always involved in these dealings. The Wildlife Society was accused by many other groups of being just focused on the hunters and fishermen and getting a sustainable yield of wildlife. It isn't that way anymore but it still has this reputation from the early days that it was too narrowly focused and not sufficiently ecologically-based and didn't take into account the dynamics of ecosystems. It should supply the best scientific information for the other organizations that are more action-oriented. But it is not an activist organization. It has maintained its professional role, rather than being out there beating the drums for a particular piece of legislation or whatever.

Golden Gate Biosphere Reserve

Jarrell: I'd like you to discuss the Golden Gate Biosphere Reserve.

Dasmann: The original name was the Central California Coast Biosphere Reserve and then we changed the name to the Golden Gate Biosphere Reserve.

Jarrell: So it includes Marin County, San Francisco, San Mateo and that whole area. Now, who drew the lines and when did this start? How was it identified as such?

Dasmann: You have all these nice simple questions which demand incredibly long answers. The Biosphere Reserve of the Central California Coast, as it was then called, was established, I believe, in 1988. Now that was the reserve itself, the legislative act that identified this area as a biosphere reserve. It extends, as you say, from San Mateo County, through San Francisco, Marin County and on up into a corner of Sonoma County at Bodega Bay.

Jarrell: How was that expanse identified as such?

Dasmann: Well it was negotiated with the National Park Service, the California Department of Parks and Recreation, the Marin Municipal Water District, the San Francisco Water Department, the Audubon Canyon Ranch, and the National Marine Sanctuaries.

Jarrell: Are for instance, Mount Tamalpais and those gorgeous lakes around Mt. Tamalpais included?

Dasmann: Along with Tomales and Bodega Bay, they all were designated by their agencies to be part of this biosphere reserve. People who were particularly active in prodding the agencies and getting them to get together, include Laurie Wayburn and Nona Chiariello.

Jarrell: Chiariello from Stanford's Jasper Ridge Biological Preserve?

Dasmann: Yes. Nona was working with Mooney from Stanford doing a survey of the California situation and recommending the establishment of biosphere reserves for these different areas, based on ecological characteristics. The recommendations were then taken to the U.S. State Department to have this area designated as the Central Coast Biosphere Reserve under the UNESCO program.

Jarrell: So it goes from the state and all of these organizations and state governments and water districts. They get it all together. They craft this whole plan. Then they submitted it to the U.S. State Department?

Dasmann: Yes, because it's an international relationship. When it's approved here the odds are it's going to be approved in UNESCO so there's no real difficulty there at all. And nothing that isn't approved here will ever be approved there.

Then we come to the action part of this which is the establishment of the Biosphere Reserve Association, the organization which oversees the whole biosphere reserve and tries to bring the various agencies together to cooperate and collaborate on various joint projects. That is theoretically the way it works.

Jarrell: So you have a whole consortium of state, municipal, and local entities.

Dasmann: Yes, including universities; Stanford has a biological preserve and then there's the University of California at Davis's Bodega Bay Research Station. So all these are supposedly happily working together to achieve the goal of unified protection and management.

Jarrell: How does it operate and where does it get its funding? What's the nitty-gritty of implementation? You have goals for either restoration or preservation of reserves. Where does the power lie?

Dasmann: There is no power; we have no authority to do anything.

Jarrell: But you have the power of persuasion?

Dasmann: That's right. We're continually reading the bible to them, you might

say, so that they know the right course.

Jarrell: The bible of conservation biology?

Dasmann: Right. It works out quite well. It all depends on whether someone in the Biosphere Reserve Association is a good fundraiser. Now as long as Laurie Wayburn was president there seemed to be funds coming in. When she left as president to set up a new organization there was no one to follow up on her fundraising efforts.

Jarrell: Where did she raise her funds and what were the funds for, specifically?

Dasmann: Various Bay Area and other San Francisco-based foundations brought money to get the organization formed properly with a paid, salaried executive secretary who could carry the ball so that the executive board would meet a few times a year but the ongoing work would be through paid staff.

Jarrell: How many people were on the board?

Dasmann: At the time it was getting started there were about half a dozen. There was the Superintendent of the Golden Gate National Recreation Area, Brian O'Neil, Jim Barry from state parks; Eric [T.] McGuire from the Marin Municipal Water District, and Ed Ueber from the National Marine Sanctuary. The San Francisco Water District has been less involved in the whole thing. I don't know why they have not played as active a role as the Marin Municipal Water District.

Jarrell: What entities have participated from San Mateo, and southern San Mateo County?

Dasmann: I've been trying to expand the biosphere reserve southward and in this I've been joined particularly by the oceanographic side of things. Because you know the biosphere reserve extends out as far as the deep ocean, the continental shelf edge, beyond the Farallones. It's also a national marine sanctuary including the Gulf of the Farallones. We've also been trying to expand it to include the northern half of the Monterey Bay Marine Sanctuary because it is administered from San Francisco. I've just written a letter which is somewhere in cyberspace now requesting that we agree to designate this as part of the biosphere reserve. It's already a marine sanctuary and it's as protected as a marine sanctuary can be. But it isn't a part of the biosphere reserve which would tie it in to the other protected areas.

When I left the presidency it was agreed that the next big push had to be towards getting an executive director and the secretary established and paid for. So that's the fundraising obligation that has descended upon the new acting president, Philippe Cohen, who is also the head of the Jasper Ridge Preserve. An important part of his job is keeping in touch; the biggest problem we've had is that we don't have the communications going very well between the different units of the reserve. We need somebody who is going around talking to people, seeing what their local problems are, what they're doing, what's happening, what help do they need? Then we go out and try to get that help, if possible. It was obvious to me that there was so much that needed to be done that we couldn't do because we had no money. You can only get so much out of volunteers who are putting in the time to give you their advice and assistance. You can't expect them to do the nitty-gritty work of scheduling the meetings, putting out the minutes, putting together an agenda, all that stuff, you know. It's tremendously time-consuming.

Jarrell: Can you give me an example of some problem you've identified as a board that needs to be done?

Dasmann: We had felt, from the time that I came into this, in 1990, the need for a look at the biodiversity of the biosphere reserve. What species are where? What's the story? What do we know about them? What's endangered? What isn't endangered? So we felt the need to have a symposium on the biodiversity of the Central California coast. That was a big fundraising effort that we'd done after Laurie Wayburn left, and was a very successful meeting, I think. We brought in speakers from back east, as well as local people who looked at the whole biodiversity issue and put out a nice publication, the *Proceedings of the Symposium on Biodiversity of the Central California Coast*.

Jarrell: Do you work with other agencies?

Dasmann: Yes, we help them when possible, raising the money for a project if the state budget doesn't have it. That's the way it works. For example, trying to restore populations of coho salmon means restoring the streams, which means regulating the use of the land, the drainage of the streams. We had interagency cooperation on that project. It's going on right now, between national parks, state parks, and the Marin Water District. Then you run into the need to regulate private land use and that gets sticky. You have to do it by persuasion rather than

by fiat. So it's a tricky business and then you have to get the experts together to do the actual work. In order to save the fish you have to deal with the habitat.

Jarrell: It reminds me of the children's story about the old lady who is trying to get the pig over the stile; she beats the dog with the stick; the dog bites the ox's tail; and on and on. But you can't hit anybody with the stick. You have to be nice.

Dasmann: That's right. We don't have a stick. All we can do is whistle. If we had money we'd be quite successful, I'm sure. But we don't have any money. We have a conference and we raise a bit of money here and there and its all been pretty much piecemeal funding. We've got all these dedicated people like Larry [Lawrence D.] Ford, who is now heading up the science council for the biosphere preserve. He's put in a lot of time and energy. Christine Shonewald has really jumped in on this and raised money; she got $10,000 from UNESCO, from the Washington, D.C. office of MAB, which is no mean accomplishment, which mostly goes toward on-going expenses related to maintaining the organization. But also it funds preparing and planning and working to accomplish things.

Jarrell: I learned, Ray, when I was doing web searches, there are over 300 biosphere reserves around the world.

Dasmann: Yes. There are 47 in the United States, I think.

Jarrell: Could you give me an example of a particular biosphere reserve that you think is really state of the art?

Dasmann: We're the model. In the publication I mentioned listing the outstanding biosphere reserves in the United States, we were the first one listed. We are the first one you encounter as you open that book.

Now, there's a Southern Appalachian Biosphere Reserve that's probably more advanced than we are. It came in during the initial wave of designating biosphere reserves. But you see most of these reserves are simple. For example, there's Sequoia-Kings Canyon National Park, which is now a biosphere reserve, but it's just a national park so it doesn't have the problem of bringing all these different groups together. As long as they are doing the national park right, they're doing the right thing by the biosphere reserve. So that's the simple form and that's what they've used in most places around the country.

Jarrell: So that's an instance of taking a pre-existing national park and designating it as a biosphere reserve. But there are other reserves that are an

amalgam, such as the Golden Gate Biosphere Reserve.

Dasmann: We have everything, from the tops of the mountains to the depths of the oceans, the whole marine biotic problem which is getting to be a big and nasty one now, and then all these different terrestrial units which may or may not have the same purpose.

Jarrell: So you have one of the most complicated of all, because of the range, the scope of ecological diversity.

Assessment of the Environmental Movement

Jarrell: When I spoke with David Brower he said that the environmental movement today is in the doldrums. His words. He said that many environmental organizations, and he included explicitly the World Wildlife Fund, are "too dependent on legal bribery. They'll do whatever they can to get money." In light of his assessment, what is your opinion of activist groups in the United States and the international groups? Do you think that the activist environmental movement is in the doldrums right now?

Dasmann: I don't know how you measure that. Maybe. But I wouldn't have said so. Because, compared to what? When was it not in the doldrums? If you mean having difficulty getting new stuff accomplished, maybe it is in the doldrums. I remember when there was no environmental movement. There was a conservation movement which was not very strong. Now it's grown and the whole thing has become much more vital than it was a while back. So I can't really say that it's in a bad way. We're in a bad way in the sense of getting things through congress, or political action. Yes, it's difficult. But it's not as completely hopeless as twenty, thirty, forty years ago.

Jarrell: I read your book *The Conservation Alternative*, which you wrote in 1974. In that book you give a very concise summary outlining environmental problems and solutions in terms of governmental and nongovernmental entities. You said there were four factors that had converged: population, pollution, technological growth and land use. Those were the factors that had led to what you called a crisis in 1974. You outlined some very specific things that could be done at the governmental level. You wrote this 25 years ago. So maybe we could go through some of these and assess the state of environmental problem-solving today.

Your first suggestion was the conservation of wild nature. You wrote that UNESCO's World Heritage Convention should be signed by and abided to by countries. How has that moved forward in the last 25 years?

Dasmann: Well it's moved forward I think very well everywhere except here in the U.S.A. The World Heritage Convention is quite important to countries in the Third World, who have set aside areas and done what they could to protect their outstanding, unique spectacular environments—places such as the Grand Canyon, Yosemite, and Yellowstone are potential World Heritage sites. Whether they have been put in that category I don't know. Their equivalent overseas counterparts are the Serengeti in Africa, the Kruger National Park and other unique and spectacular and biologically diverse areas, as well as cultural monuments. The two fit together quite well in some cases. I think it's been fairly successful. The United States doesn't like it because it doesn't like anything UNESCO does; Senator Jesse Helms is saying what we can do. It's pretty bad.

Jarrell: So in the United States certain political factions see this as an encroachment on sovereignty?

Dasmann: They think there's a danger of losing sovereignty in some way. But of course for anything to get into the U.N. system and be approved you can be sure no country is going to lose one ounce of sovereignty.

Jarrell: So it's mostly rhetorical, the opposition to it?

Dasmann: I think so, yes.

Jarrell: The second part of this conservation of wild nature is being done at a government level. You mentioned the MAB.

Dasmann: The Man and the Biosphere Program is a research program which fits basically into the science category in UNESCO. But it's also a conservation-oriented program in the sense that you're going to have to have something protected if you're going to study it.

Jarrell: You spoke at length about that *The Conservation Alternative*, in 1974, although MAB had been inaugurated by 1978. You indicated in one of our interviews that one of the things that was true about all of these designated areas is that they needed money. How do you assess that? Has it been moderately successful? Are there some places where funds have been provided?

Dasmann: In the United States it has been not well financed at all. But in other

countries it has received some funding, whereas previously there was none. So you can say that it's made a little gain, but not nearly enough to do the job. There's a great reluctance to spend money on something that isn't politically hot at the moment.

Jarrell: And the money comes from both the participating country and UNESCO?

Dasmann: Yes. UNESCO has very little money. If it had the money it would certainly use it for those purposes. But the money, such as it is, comes mostly from the wealthier countries. Some countries are very active with finding funds for worthy projects overseas. The Scandinavian countries are leaders, usually, in providing assistance for conservation-oriented programs.

Jarrell: So if you did an analysis of dollars per capita the Scandinavian countries are way out there in front?

Dasmann: Yes, they have been. The United States is well behind. Although in the 1960s and 1970s it was quite willing to put out a lot of money.

Jarrell: The third thing you suggested was that governments support various NGOs, especially, you said, the International Union for the Conservation of Nature and its partner, the World Wildlife Fund. How has that panned out over the last 25 years?

Dasmann: Poorly. Government support is a two-headed thing. Letting governments control what a private organization can do. Government funds always have some sort of tails attached to them that you don't necessarily want. But also, governments tend to work best with other governments except that some governments around the world are often very corrupt. So you pour money into the country's government and it all gets siphoned off and never reaches the person at the bottom, who is the one who needs the help. So the best way to work in a lot of countries is through nongovernmental organizations. If a government would support nongovernmental organization with no strings attached that would be a good way to go. As it is, the NGOs depend on private support. There is a limit as to what they can get.

Jarrell: You also suggested that islands, mountains, and fragile areas needed to have special attention from governments. You emphasized that that would include protecting and respecting indigenous societies and traditional cultures. It

seems that in the early American environmental movement people were almost excluded; that the solutions didn't take into account respect for cultures and people. Especially vis à vis the Third World. The efforts to preserve species in Africa, or later on, rainforests or whatever, did not usually include respect for or attention to the needs of the human beings in these places; the human beings were excluded from the ecology. It seems to me that that's one of your major contributions. Whom were you influenced by in this way of inclusionary thinking of human beings? How did you arrive at these ideas?

Dasmann: Well that hit me when I went to work with IUCN. Because the list of national parks and equivalent protected areas around the world that IUCN was responsible for had in its requirements for designation as a proper national park that people not live there. And yet you had these situations all over the world, including here, where the people who had lived in the prospective national park had created the conditions that made it a national park, had maintained it that way over centuries or longer. So the idea of excluding indigenous people, who had grown up with and been protectors of the wild areas made no sense. So I set to work at the IUCN to get this changed and succeeded in doing so. But it was a struggle because the idea of special privileges for indigenous people just didn't go over very well. It still doesn't really.

Jarrell: It's like, let's protect the elephants but damn the people?

Dasmann: That's right. Here's an example. Tsavo National Park in Kenya was created because it had a spectacular elephant population. But it also had the elephant people, hunters who had traditionally lived in relationship to the elephants. They killed them, it's true, and ate them and did all kinds of things with them but they didn't ever really reduce their population. They took care of them, essentially.

Jarrell: Kind of like the American Indians and the buffalo?

Dasmann: Yes, exactly. But along came the national park and they wanted everyone out! The people who were kicked out really suffered. There's no need to go into detail but it was a bad thing all around.

Jarrell: When you proposed this at the IUCN, what were the grounds on which there was opposition to the idea of including indigenous people in the equation for preservation of lands and species?

Dasmann: There's some really sound basis for opposing the idea if it is generalized too much. You put something into legislation and it becomes absurd, usually at some point, because it doesn't take into account all the different ramifications. But the thing about, say, "allowing" the people to live in the national park assumes that they're going to continue with their sustainable practices.

For example, I forget the name of the Amazonian tribe right now, but one of them has had a lot of attention from anthropologists. They decided to sell off all their mahogany trees to get enough money so that everyone could have a little more money and buy things. It happens all the time. What are you supposed to do? Are you supposed to crystallize these people and leave them in place? No changes ever? Sort of a zoo exhibit? No, you can't do that. So you've got to do something else. And what is it? Certain ways of life are conducive to the protection of a national park. Even though you're living within that national park, if your way of life is oriented towards maintenance of the natural environment, then it would be fine for you to continue it. You don't necessarily have to be an indigenous person to have that way of life. So that's the way my thinking has been going. Of course indigenous people are mostly disappearing now.

Jarrell: You emphasized in your ideas on economic development that it proceed in a fashion that would be comfortable for those peoples, as opposed to outside imposition. You also wrote about the protection of what you call peripheral peoples who live a pre-industrial way of life, who might prefer to incorporate certain aspects of modern life to make their lives more comfortable, but would basically maintain a traditional way of life; that these people were at risk just as much as the species in the preserves.

Dasmann: Absolutely, yes.

Jarrell: And not looking at them, as you said, as if they're in a zoo. But what you're saying is allow them to proceed as they have and to make their own choices.

Dasmann: Yes, you'd then have to live with the choices. But this idea of building on the traditional culture has been followed now in a few countries such as Zimbabwe, where we did traditional game ranching and Zambia, what was once Northern Rhodesia, putting the responsibility for care of wildlife in the hands of

the tribal people who have always lived there, and taken care of wildlife very well with some restraints at the government level. I mean, they can't just decide to kill all the elephants and make a fortune on the ivory. But basically, leaving responsibility for that with the local people and allowing them to benefit from the income that can be deprived from safari hunting or safari camera tours, or whatever goes on that brings money into that area. So that you're allowing those people to develop along lines of their own choosing. You're providing income because their lands really produce that income through wildlife and the care they are taking of the wildlife.

Jarrell: What you are talking about would be the precursor to what we now call ecotourism which I think has developed enormously, especially in Africa and more isolated and still wild areas.

Dasmann: It's another one of those things that's a good idea but carried to an extreme it becomes ridiculous. Ecotourism can bring hordes of people into areas that should be left alone.

Jarrell: But I think some countries are limiting the number of ecotourists that they allow so that they're not overwhelmed by volume. So it's a good idea if it's carried out thoughtfully?

Dasmann: That's right. It's sort of like Alaskan grizzly bears. There's a river in Alaska where the grizzlies concentrate for the salmon run, and they have a great time and people can be practically right there next them. There's no aggression, no real fighting going on. You can watch the grizzlies catch the salmon; they don't mind as long as you don't get too close. But you have to be careful how you transfer these concepts. It always involves limiting numbers in some ways. Well you can see what's happening to Yosemite National Park as a result of not limiting numbers.

Jarrell: You also suggested, as an entré into the next section of your book, diminished military spending.

Dasmann: Yes. Wouldn't that be nice?

Jarrell: How would you rate that in the last 25 years, Ray?

Dasmann: Oh it's been a failure, utterly.

Jarrell: Okay, how about mass transit?

Dasmann: It's been successful in some places but it's sure hard to even get it across in Santa Cruz, which you'd think would be a great progressive setting. But it isn't.

Jarrell: Yes. So then you moved into the kinds of activities that could be carried out on an individual level. You talked about the decentralization of society, and you mentioned E.F. Schumacher, the economist.

Dasmann: *Small is Beautiful*.[13] Yes, Schumacher was an influence. I had many influences at that time. Schumacher was very good and widely read. I don't think he went quite as far as I would have gone.

Jarrell: I would say that your suggestions in 1974 seemed to me sort of an artifact of the 1970s, of that blossoming of alternative ways of thinking that were quite radical, quite innovative, very dissenting from the status quo. You even wrote a section on the development of the self, childrearing practices, birth control and equal rights. You talked a lot about sexism and gender inequalities. So that you kind of threw all that into the pot, too, as elements that could have a profound influence in making these things come to pass, in terms of saving the environment and the planet and human beings. You didn't leave that out.

Dasmann: Let's go back to Zimbabwe. They have tried to sell the idea of population limitation because the rate of growth there has been enormously high and the resources are not there to support the people and so they need changes. But how do you accomplish that? Where all the tradition is against anything like birth control. Babies are the greatest thing; they are so valued. Well the way that has worked is women's health; pay attention to women's health and the newborn child's health.

Jarrell: And then you reduce infant mortality.

Dasmann: You reduce the infant mortality and you beget a consciousness among the women that begins to change the traditional way of looking at big families. You don't have to have a big family if you know you're going to be able to successfully rear the ones that you do have. You don't keep adding more and more so they keep dying off at the other end. It's a defensive thing, population growth. You can't blame people for thinking that they're better off if they have a big family than if they have just two, because a big family is at least some protection against hostile governments and life conditions.

Jarrell: I read an article several days ago addressing the failure of coercive methods of birth control. It stated that the empirical evidence now is that if you educate women and give them health care the birth rate will fall. It's a by-product; it absolutely falls. But if you go in there with forced sterilization or all kinds of medical technology, it doesn't integrate into the traditional culture.

Dasmann: That's right. I agree.

Jarrell: Population is such an important element; we are reaching 9 billion people by the year 2015.

Dasmann: That's what they're threatening us with.

Jarrell: One of the conflicts in the environmental movement, is the coercive approach advocated by some, versus a respect, that people will rely on their self-interest and that there are ways of introducing these ideas that are not coercive. I think of some of the real firebrands in the American movement anyway, of just wanting to impose restrictions across the board.

Dasmann: Like China did.

Jarrell: Yes, exactly.

Dasmann: One child or you're out.

Jarrell: Yes, exactly. You're penalized and you have to have a forced abortion or whatever.

Dasmann: That's bad. It doesn't work, is the main thing.

I've always liked studying islands because they're little microcosms of the world. Islands are surrounded by oceans which at least you can get across and swim in and make use of. But the world isn't. There's nothing out there within reach. Forget it. But we can get all this enthusiasm about space exploration and not have enough money to explore the oceans. It's pretty strange.

Jarrell: I heard a report on National Public Radio the other day that a consortium of environmental groups had gone to the Pope in the last year and asked him to consider designating the entire earth as a sacred place. There has been no action from the Vatican.

Dasmann: I don't think it's within its grasp, somehow.

Jarrell: No, but symbolically, there are places that have been designated as

sacred, you know.

Dasmann: Well it's like Dave Brower's notion of Earth National Park. I would make it a little broader; I would say Earth Biosphere Reserve because there's a lot more flexibility.

Assessment of the Environmental Movement in 1999

Jarrell: Today, in 1999, whom do you think are the key people or environmental organizations carrying out some of the ideas that you enunciated in *The Conservation Alternative*? You were so clear about how you analyzed the situation 25 years ago, what needed to be done on the public and the non-governmental level.

Dasmann: That's a difficult one. I think that most of the environmental organizations are on the right track. But the track is divided. There isn't just one track. There are many tracks and they are emphasizing different things. Some are more concerned with land use. Some with pollution. That's the more popular one, in a sense. In fact many people seem to think of environmentalism as pollution or non-pollution and not consider the wild world or even the agricultural world, in some cases, except as a source of pollutants. On the population issue, for example, you can start with Paul and Ann Ehrlich and the work they continue to do, and the ideas they keep putting out, different versions of the population issue. I think they're great. I think they're ahead in their thinking about the problem. Now they work with the Center for Conservation Biology at Stanford University and put out an enormous amount of useful information. The Population Reference Bureau in Washington, D.C., is a rather conservative group, but they keep hitting the same issues and getting that information out, on the status of the world population.

Jarrell: Conservative in what way?

Dasmann: Well, they are less advocacy-oriented and more into an analysis of what's happening. Their publications tend to be reliable in relation to the statistics.

If you move over to another area, Frances Moore Lappé's Food First group, I think is right on the track in relation to land use and the need to get the balance back to helping the people who most need help. In that sense they are closer to

what I call ecodevelopment based on the premise that you start with the people who are most in need; not the people in the ruling class, but the people who have the hunger, the poverty, the whole bag falling on their shoulders. Food First has been a leader in that way in many respects. They would disagree with the relative importance of population control as compared with economic development. But again, what is meant by economic development? That's where the whole sustainable development thesis just falls apart. Because they mean something else when they say development.

Jarrell: What do they mean?

Dasmann: They mean bringing in our technology, our ways of doing things, our demands on their economy to benefit the United States, actually, in the case of this country, rather than to worry about the well-being of the people on the ground. Ecodevelopment emphasizes getting the development effort to those who most need it and know how to do it and just need a little help in doing what they already know how to do. There are so many examples. That Grameen Bank idea started in Bangladesh, where these banks loan a little money to the poorest people who have no credit, no anything.[14]

Jarrell: Hillary Clinton visited Bangladesh and has highlighted this idea of a very modest amount of capital that can help somebody to start a very small business that's going to be taking care of their whole family.

Dasmann: Yes, exactly. The Grameen Bank loans, say, $100 to let someone buy the flour or the grain to start a little bakery in selling loaves of bread to the local people. They've all tended to be very conscientious about paying it back to the bank. But it enables them to get started.

On the agricultural side of it, it's so bad because in the U.S. we have our agricultural methods, energy-intensive, fertilizers, pesticides and everything else. We export that to these Third World countries and of course it benefits the big operators, the big landowners, whoever they are, and just misses the people who need the help.

It's such a bad thing to be doing because for example the African farmers have always been very innovative in their own way. They've come up with all kinds of ways of using the land which is not very productive to begin with, but in such a way that its productivity is enhanced; they know how to do that on a small scale. But it disappears when you get to the big landholdings and the few people

who do benefit from the import of Western methods and technology. I can rave on about that. Which area do we pick on? I don't know. They are all tied together, which is, of course part of the problem.

Jarrell: Well in terms of agriculture, remember the Green Revolution?

Dasmann: That's the baddie.

Jarrell: Okay, what is your point of view on the Green Revolution, which was going to be the savior of the Third World.

Dasmann: Well I think it's unfortunate, it's too bad that it had to happen the way it did. The idea of anything that involves such an enormous input in order to develop the profitable output, the enormous input of energy, particularly, and the chemical materials and the hybrids, and now of course gene modification. The things they are going in for are really scary.

Jarrell: Why are they scary?

Dasmann: Well, the genetic modification thing, diddling around with a gene or a piece of DNA, they don't know what effect that's going to have. They've measured certain effects within a limited area, but they don't know what effects it is going to have on the natural world. What is formerly a well-adjusted plant to a particular environment, it may have been preyed on by insects, but it is relatively well adjusted and able to survive. They modify it and then it is no longer quite the same plant. It becomes an invader like any introduced plant from another part of the world would be. There may be no predator to feed on it, nothing to keep it under control, and it can spread like crazy, with no benefit, nothing but loss in the long run.

Jarrell: Why?

Dasmann: Because it is wiping out, over-competing, with native species, or well-adapted species, and depends entirely on the maintenance of this artificial set-up.

Jarrell: There was such intense optimism with the Green Revolution with wheat, corn, different hybrids that were developed at agricultural schools.

Dasmann: Sure. It was going to be the savior of the elite in the Third World, yes. I'm sorry, I am very embittered about this whole area. For example, when I was in Bali, I talked to some of the Balinese about their beautiful rice terraces that

they've had for hundreds of years, at least, if not millennia. They said they grew the new hybrid rice for the export market, but they didn't eat it. We eat our own varieties which we maintain over here. It's not fit to eat, is the way they feel. It has everything leached out in favor of high productivity. So okay, they can devote a little part of their land and maintain their old way of doing things. They are able to do that there. We haven't completely wiped them out yet. But we're working on it. Bringing in more Green Revolution stuff. It's done an awful lot of damage as far as I know, in displacing people. They can't possibly make a go of it as they had in the past because the prices are set by the global economy and not the local economy. They lose their land; they have to sell it to the developers, to the big operators. Then they're out on the fringes somewhere, out of sight, out of mind. Most of the population in most of the Third World countries is out of sight and out of mind. It's the governments they work through, and the governments don't usually represent the people, or even have the interests of the people at heart.

Jarrell: Who are the promulgators of the Green Revolution, in terms of the First World?

Dasmann: One of the them is on the faculty here at Santa Cruz. I don't want to name names. Who are its promulgators? The State Department, the U.S. Department of Agriculture, the Department of Defense, and many private organizations representing the multinational corporations. The environmentalists are the minority always, it seems. But their work with the local people, building on what those people already know and going on from there, is the only way to fly that I can see. I talked about it in my autobiography,[15] as distinct from what we're talking about here, using the example of Sri Lanka, and the enormous Mahaweli River development scheme, which involves construction of all these big dams, and the consequent flooding of the lowlands, the farming lands of the past, and the creation of new irrigated farming lands.

Jarrell: Contingent on the development of these big dams?

Dasmann: Yes, the dams have now been built. The whole thing is happening. But it involves setting up model towns and villages and having these small plots of land where the people can grow their rice. The only trouble is, of course, that the small farmer can't and doesn't have the backing any more of the village. They are in new social situations and are bound to be taken over by those who are a

little more wealthy. You gradually have these small plots of land being taken over into large land holdings, and then the large landholders are fat and happy and they don't have to worry. It's maddening. I'm not sufficiently expert in most of these areas to be able to do more than look at the broad picture. When it comes to areas where I am more expert, wildlife conservation, natural area conservation, it's a bit the same. We tend to export our way of doing things. I don't just mean America; I mean the industrialized world. Our way of doing things. Our way of setting up a park. Our way of conserving the species. Without consideration for the fact that in many cases the whole natural scene and all the wildlife have been maintained for millennia by the local people using their traditional methods. With the introduction of this economy that is based on bottom-line, dollar gain, dollar loss, you have this problem developing in the first place. I mean the tendency, for example, to move all people out of national parks, after they've been maintaining the national park for centuries.

Because it's the natural scene that we're trying to protect and we go in there and say here's a nice natural area. If we just move these people out we'll have this beautiful area. Without considering that it's there because those people have taken care of it for centuries. They know how to sustain it. That's how I began conceiving the ideas shaping the UNESCO biosphere reserves. It isn't just a national park. It's the recognition of the need to maintain the ways of life of the people in the area to be protected. If they've been protecting it, just help them protect it. If they haven't been protecting it, well teach them how to do it. Using local examples and local knowledge as much as possible, not bringing in our high tech stuff.

Jarrell: How does your approach towards indigenous peoples have political implications?

Dasmann: When I started preaching on this I started with a group of Pacific Islanders and the need to continue the old ways because you can't count on the big tourist planes coming in and building an economy on tourism, even eco-tourism. You've got to have a local subsistence base before you can do that sort of thing. Our tendency has been to go in and assume that these people didn't know anything about anything and bring them the benefits of our scientific knowledge and all the other stuff that we have to sell. So that if anything goes wrong with the comings-and-goings of the tourists and they all decide to stay home because it's a bad year, well the local people don't have anything else to

fall back on.

Jarrell: I remember, when you were in the environmental studies board, I got to know your colleague Bryan [H.] Farrell, who was very interested in the evolution of tourism.

Dasmann: Its big impact.

Jarrell: The big impact of First World tourism on these very fragile kinds of environments.

Dasmann: Yes, that's true. Well he did a book on Hawaii that really gets at this problem of general tourism. Eco-tourism can be actually beneficial if it's controlled. But it can't be the mass sort of thing . . .

Jarrell: Big jet planes coming in, dropping off thousands and thousands of people.

Dasmann: Yes, cruise ships, and all the rest. I was talking about Sri Lanka and that Mahaweli River development scheme. At the same time you have A.T. Ariyaratna, who was a Buddhist high school teacher in Sri Lanka. During the late 1970s and 1980s he started taking the local kids from a wealthy school in the capital of Colombo out to the villages to work during the school vacation periods. He wanted them to get acquainted with the villagers' needs and wants and then return and help the villagers develop whatever it was that they wanted, a well or a road, small things always. He gradually developed a system from the ground up, village by village. It was popular and the villagers liked it. These kids came in and worked in the villages, using the local authorities as much as possible, which in Sri Lanka would be the Buddhist monks in the villages. They worked to bring in the women, right from the start. Because the women do all the work. They are the ones who will do the innovative thing in agriculture if it's going to be done, the ones who do everything, really. At any rate, his system was working. The last I heard there were seven or eight thousand villagers involved. It's been going as long as the Mahaweli Dam scheme has been going. He's been opposed to the Mahaweli scheme from the start.

Jarrell: How did he come upon this point of view?

Dasmann: He went to work with Mahatma Gandhi in India to see how Gandhi had done it; his whole scheme is based on Gandhian principles emphasizing the importance of the village.

Jarrell: Gandhi had that whole idea of sustainability in the thousands of villages in India that each village could meet its own needs.

Dasmann: That's right. They could produce a lot of them, yes. No one ever really pretended you could get entirely self-sufficient, but at least self-reliant was the term. Know how to do it and don't lose the old knowledge of how to do it, because that's what's important. Whatever has worked should be maintained.

Jarrell: So Ariyaratna had been a student of Gandhi's and went back to Sri Lanka?

Dasmann: He had gone to India and saw how Gandhi was doing it and came back and broadened his scheme so that it was no longer just students involved but teams of people who would assist with local problems, experts on whatever they needed. How to build a good road, how to get water. You see Sri Lanka had an excellent system of dams and irrigation about the time the Roman empire was getting started. The whole country was covered by small dams and irrigation systems. But we don't operate on a small scale when we come in with multi-billion dollar developments that create a big impression. At any rate, these two things have been going side by each and I don't know how they are winning, because I haven't been back there. I know that someone in the Agency for International Development finally got some money to support Ariyaratna's scheme. So they did get money from A.I.D. I was there in the mid-1980s. After we had visited and all gone home the Tamil revolutionary group swept through there and killed everyone we had talked to, twenty park service people. For no reason, they just happened to be passing through and shot everybody. Wars are not kind to environments or people.

Jarrell: Well you know, it's very interesting, you are talking about this whole huge scale of dams and Sri Lanka. Mark Hertsgaard recently wrote a book called *Earth Odyssey*. He went all over the world, to Asia, Africa and South America. He writes about the Dinka in Africa as a sort of prototypical group of people, and then also, very interestingly, he writes about the Three Gorges Dam in China and that approach to development. He sees this as one of the huge environmental issues in the next ten or twenty years. Several of these huge dam projects are displacing hundreds of thousands of people. It's that old development model but it's cutting-edge in China. There's been much protest about this huge dam building in China. Do you follow China very much?

Dasmann: I don't because I haven't been there and it is such a huge system. It's hard to evaluate. The most scary thing happening on earth right now is their modernization which is based on the ideas that we should have gotten past in this country. Big dams; big development; move everybody out and put it together the way we like it. They seem to be completely unaware or unbelieving in ecological concepts or principles that should be governing their development activity. But it's been that way from the start. The Marxist model viewed nature as something you conquered or pushed aside. It's really no different from the capitalist model. They just have different labels. Subdue nature. Use the resources. I don't want either of them.

Jarrell: I wondered if you'd followed China, because it seems that change there is so accelerated.

Dasmann: It's so worrisome. I follow it to the extent of reading about it in the newspapers. But I've never really had a grasp on what is happening where since they changed all the names a few decades ago.

Jarrell: Right, the new transliteration.

Dasmann: I knew where Peking was and Nan King and Shanghai and some of those places, but now that they don't spell them that way anymore I've lost track. But it's so bad. They all want motor cars; they all want the so-called benefits of our civilization. They're going to get them, regardless of what stands in the way. Well what stands in the way is global warming, for one thing, and a few other ecological consequences are coming down the road at them and they are going to get hit. There's no getting around it. It's going to be bad.

Jarrell: Hertsgaard says the world's environmental future is more at stake in China than any other place on earth. Its approach to development measures successes by economic growth, while ignoring disastrous environmental effects. What organizations can have an influence on such massive development?

Dasmann: It's very difficult. I've met Chinese ecologists who are every bit as well informed as anyone anywhere. But they have no political influence. They're not able to get the message across somehow. They've brought in U.N. and other experts to look at this enormous dam on the Yangtze River, the Three Gorges Dam there begun in 1997. They all say don't do it. But the Chinese are going to do it anyway. The fact that they have to move a million people out of the way and flood all those farmlands doesn't mean anything to them. It's been that way

from the start. I got scared by China right after the revolution and things were just beginning to change, because they were throwing out all ecological knowledge. They'd kill all the birds because some birds were eating the grain.

Jarrell: You are talking about when they collectivized the farms?

Dasmann: Yes, in the 1950s, that general period. It took them awhile to get organized. But the advisors they seemed to be paying attention to were just the opposite from ecologically-minded; they were entirely economically-minded, of building this strong economy, and of course going in for all the high-tech stuff they could get hold of. The best army in the world, the best air force, the biggest bombs, distinct from maintaining forests, fields and farmlands. I'm getting more and more bitter the older I get.

Jarrell: Who are some of the people today that you draw inspiration from whom you think are fighting the good fight, are promulgating ideas and practices that are going to make a difference?

Dasmann: I know that is the question you asked but I just evade the answer. It's difficult to know. I've been associated with the World Wildlife Fund for ages, but they were dead wrong, I thought, in their support for NAFTA, the North American Free Trade Agreement. Because it's promulgating U.S. technology, U.S. ideas, into systems that have worked on their own very well, and blotting them out, getting the whole economy geared towards export of stuff that we want.

In other respects the WWF is doing all the right things. So on balance I am for them. I think they're great. Because they are doing so many things in protecting the natural world on which we all depend. We cannot duplicate it; we cannot manufacture it; we can't do something ourselves that replaces it. Global warming is enough to make your hair stand on end. I see it finally got into the *Santa Cruz Sentinel* this morning. It's really big stuff now. And on TV they don't just make a joke about it. That's taken a while to happen, too.

It's happening and you see what's happening is the Chinese, for example, all want cars, the hell with pollution control devices, just let them pollute. On the one hand building up all these carbon dioxide producers and on the other hand getting rid of the forests and other natural vegetation that would be storing the carbon dioxide and pulling it out of the atmosphere. It's just scary to see that happening and realize that if we put on the brakes now and do the right thing, it

will still be ten or twenty years before we have enough effect to counteract the bad effects from our reliance on this petroleum-driven economy. There's no getting around it anymore. We're going to get hit. Because the world is not fundamentally friendly to the innovations we're bringing on, the natural world, the world that only has a certain ability to absorb the kind of crap we're pouring into it. Actually the effects are already apparent; there are more tornadoes; bigger, fiercer hurricanes; more floods; more droughts; more everything.

Jarrell: There seems to be such denial. People actually say global warming is debatable and question whether it is scientifically, empirically true. I mean that at the political level.

Dasmann: That's right. It's very discouraging because we seem to be determined to go in the wrong direction, unwilling to face up to the consequences. I was saying that the other day at the talk I gave at the University. [See Appendix I] Someone asked what it was going to be like a century from now and I couldn't get past ten years. It's happening fast now. It isn't that we don't know the right thing to do, it's just as we said, there's a denial of the consequences. We don't want to believe in them so they aren't there.

PublicationsJarrell: What has been the most stimulating, personally satisfying work you have done? You've been an academic at Humboldt State and UCSC; at the Conservation Foundation, and the IUCN, where you were synthesizing and creating an overview of these larger environmental problems. That was the macrocosm, whereas your fieldwork was exploring the microcosm.

Dasmann: Originally I had in mind being a wildlife biologist and spending my life in the field. But I got to a point where if I wanted to make enough to live on, I had to take a better job and started climbing up the ladder, so I tended to get away from field work. My last really big field project was the African game-ranching project. Much of the work I've done since then has been this sort of pulling together, synthesizing, analyzing work done by other people. Some of the most interesting work I've done was on plant communities and plant succession on the Humboldt sand dunes. I never got around to publishing it because it just didn't work that way. But it was fascinating work, and I enjoyed it.

Jarrell: You have such a range of books, too.

Dasmann: I started with the *Pacific Coastal Wildlife Region* which was this little paperback field guide to identification of plants and animals of the North Coast. My first really solid book was *Environmental Conservation.* That was the kick-off. It was very well reviewed. So I went on from there. *The Last Horizon* was my first popular book. That resulted from *Environmental Conservation*, which attracted the attention of Frank Fraser Darling, who told Peter Ritner of MacMillan Company that I could write the kind of book he wanted which was a sort of world view of conservation problems. Then the MacMillan Company decided I could do it again with *The Destruction of California* and *A Different Kind of Country* and *No Further Retreat*, in the MacMillan series. The textbook went through five editions and major revisions.

Jarrell: At the same time you were writing reports and papers at the Conservation Foundation, which were published in a different kind of venue, for a different audience.

Dasmann: That's right. The thing that got me off into economic development was the book *Ecological Principles for Economic Development*. That derived from a conference held by the Conservation Foundation on that subject which brought people together from all over the world and produced what was at the time quite a gain in the sense that it brought the attention of developers to ecological factors. The results have been things like the Environmental Quality Act and all these review procedures that you have to go through now before you can get an okay on building, or a big dam on a river, that you didn't have to do forty years ago.

Jarrell: What have you been doing since you retired from the University in 1989? What has really engaged you in terms of your writing?

Dasmann: Well I have done a fairly major library research project building on where I had gone with *The Destruction of California* and then *California's Changing Environment*. I dug in deeper in the literature and looked at the whole situation and changed my mind about certain things.

Jarrell: What have you changed your mind about?

Dasmann: Originally I had been inclined to put a lot of blame on the Gold Rush for the adverse environmental changes in California, the destruction of wildlife. But the more I dug into this subject, and the more I thought about it and worked it over, I realized that the process had started well before the Gold Rush. The

Gold Rush kicked it into a higher gear and maybe accelerated it. But the destruction of the resources, the countryside, the plant communities, in California had its roots way back when the Spanish first arrived and established the missions. Not long afterwards the attack on sea otters and fur seals began. Then the whaling ships came out from the East Coast. So you can't go putting all the blame on the Gold Rush. The Gold Rush brought a lot more people into the state and accelerated the ongoing process of resource destruction.

Jarrell: During the Spanish *rancho*, pastoral period of California's history there was the introduction of cattle and all kinds of non-native plant species.

Dasmann: Yes, but even before that with, probably with Cabrillo, annual, exotic species, alien species, from the Mediterranean region of Europe were brought into the state. But then they were able to spread because of the California climatic pattern of drought and flood, so that they were able to, with the drought periods, with the native vegetation weakened by drought, the annuals from the Mediterranean were able to invade more rapidly and spread all over the state. So you have to look very hard to find a natural grassland in California now, a grassland that isn't all made up of introduced species from other countries. But people don't pay much attention to grass. Grass is grass and looks nice.

I never liked the idea, after I did some additional research, to think of the Gold Rush as a vast increase in population. I mean, compared to the rush we have every year now it was a drop in the bucket. 50,000 people or so came in. Okay, it was a big change. But not because the state was suddenly overwhelmed with people. That's a recent event.

Jarrell: If you read the census reports, it was very modest. The population went from very small to within ten years about 250,000 people. But in terms of the vastness of the state, the region.

Dasmann: That's practically nothing.

Jarrell: The population was also concentrated in very few areas.

Dasmann: Definitely.

Jarrell: The population of California now is about 33 million.

Dasmann: The growth now is over half a million new people a year. It's scary. The difference, of course, is now we do have the infrastructure in place. We have the government working. We have everything. In Gold Rush times there really

wasn't any government, for practical purposes. There was no law enforcement. There was nothing. You could get away with anything. So the impact of say, 50,000 or 100,000 people then was far greater than it would be now. Now the rules and regulations are all written out and the law enforcement people are all over the place.

Jarrell: Well you've kind of moved into an area that I did want to ask you about today—doing a postmortem on *The Destruction of California*, the conclusions that you reached in 1965, in terms of the California that you knew as a boy. You said in 1965 that there were very, very few places, and they are further and further far between, where you have a sense of that spaciousness of the natural wild world. Then you discussed urbanization, sprawl, population, water—you go through all the facets of the environmental condition of the state of California. What conclusions do you draw about what you thought then? The reviews that I've read about it, also, it was picked up all over the country, and people were saying things like, this isn't just about California. This is about Massachusetts, about Colorado; this critique is about every part of the country. This is a prime case study, writ large. So when you look at that book, if you were going to rewrite it, what tack would you take? You're already saying your analysis of the pre-Gold Rush history has shifted, that you see it in a more complex way.

Dasmann: Well no matter how you look at it, it looks pretty grim. The situation, all the problems I wrote about in *The Destruction of California,* are still here. We haven't solved any of them. Things are much worse than I'd imagined. I thought it was bad when California reached 20 million people. In fact I thought it was terrible. But now we're at 33 million, 35 million coming up in a couple of years, then 40 million. It just keeps booming along. We haven't solved the problems. We don't do the right things. We know what the right things are now. There is no question about that. But we are still rebuilding on flood plains so that things will get washed away in the next flood. We are still rebuilding in chaparral hillsides where things will get burned out in the next drought. We're still thinking all we need is some dams and wells and we will have all the water we need forever. We don't have the water. Well, you have to laugh finally because it is so completely hopeless.

Jarrell: There is talk now of reviving the idea of the peripheral canal.

Dasmann: Oh yes, the peripheral canal. And then of course they'll want to tap

the Columbia River.

Jarrell: For California?

Dasmann: And reach into Canada. Of course. Well it's been seriously discussed. All that water up north. They say there aren't enough people there to justify keeping their water, bring it down here where we can use it in the Silicon Valley. I'm not very cheerful about the future. I feel very bad about it. Because when I look at the kids growing up now and their opportunities, compared to what was available when I was their age it is just not at all good.

Jarrell: In terms of the natural world and the whole environment?

Dasmann: In terms of what they're going to do with their lives and what their career choices are going to be, and what kind of a world they are going to live in. I don't know. It's not very bright. I don't blame them for being at a loss.

Jarrell: Why do you think with such a vast repository of knowledge that we have now about the correct things to do that the citizens of this state or of this planet are so resistant to taking what are quite simple measures? The processes by which you arrive at the solution and implement it, they're complicated; but the actual solutions are quite simple, in a way.

Dasmann: Quite often, yes. Quite simple in a way. It seems like we're in denial. We can't look at the reality because it's too horrible, so we say it doesn't exist. So we go into this pattern of saying, well that's just a lot of alarmist talk; that's doomsday thinking so we don't do the things that we need to do. If you read the newspapers everyday or listen to the TV, they don't talk about the real threats to the world. They talk about the trivial things that are on top of the newspile, the cutesy stuff, the stuff that they think will attract readers. They don't want to even dwell on the real situation. The answer is that is that it is bad for business, and business rules at the present time.

Think of the implications of global warming alone, which is happening. It isn't as though it were going to happen sometime in the remote future; it's happening right now. The long-term implications in the next ten years, say, are horrendous. Is that getting attention in the news media? No. They finally get around to mentioning it once in a while. Because to do something about it requires the reorganization of our whole economy, to get away from a petroleum-driven, hydrocarbon-driven economy, to a sustainable economy that doesn't involve the

accumulation of carbon dioxide in the atmosphere. But we're not facing that. We're not really ready to deal with it. We get the car manufacturers to agree that in ten years they'll do something. Well they may not have ten years. I don't know what to say about it, except that it's very alarming. The answers are not always easy. They often are easy. But when they're not, they demand a lot of attention and they're not getting that attention.

Jarrell: I remember in 1974 or 1975, when we had the first big gas crisis, during the Carter presidency, he called it the moral equivalent of war; that we had to really become less dependent on foreign oil. There were some real initiatives, and at least at the rhetorical level some idea of moving off this complete and utter dependence on fossil fuels. It just seemed to peter out.

Dasmann: We just didn't want to listen to it.

Jarrell: It seems in Western Europe that they've made a much more serious effort with alternative forms of transportation, without this complete reliance on the automobile.

Dasmann: I think you're right. Well, for one thing they never knocked out their train systems. In Switzerland, when we were there, it was so easy to just walk down to the train station and go either direction, to Lausanne or Geneva, and be there in no time at all, and everything was convenient to the train. But no, here we tore up the tracks because of those who wanted to sell more oil and more motor cars. The pressure was on there to get rid of the old electric trains. It was fun when you could ride on electric trains all the way from Fairfax to wherever down in the south and across the bridges. No, it was too good to last, too sensible to be continued.

Jarrell: So the outcome, you are saying, is much grimmer than you ever imagined when you wrote *The Destruction of California*?

Dasmann: I think so. We have just added more problems to it. We have not solved old problems. We have not put what we know into operation. I know I'm being too negative; we've actually done a lot, but not compared to the amount that needs to be done. The environmental organizations have done a good job of building up public awareness of what's really happening. But they don't reach a big enough audience. So there's progress in the sense that a million people are now aware of environmental problems, but 20 million are not aware at all. They don't want to even think about it, don't want to look at it, because it seems

threatening and there's nothing they can do about it. That's the problem with writing this stuff. When Rachel Carson wrote in the 1950s she had an impact and a lot was done as a result of *Silent Spring*. But now it's as though people are saturated with this kind of information and they can't, don't, see what they can do about it and they don't want to do anything about it.

Jarrell: Or maybe they feel hopeless?

Dasmann: Hopeless. But the answers are available, that's what drives me crazy. People do feel hopeless about it. They don't know what to do. And so they turn it off, forget it.

Jarrell: You know this drought that they're experiencing in the Northeast right now? We don't think of a drought in that part of the country— Maryland, Chesapeake Bay, New Jersey, New York, Connecticut, West Virginia.

Dasmann: Droughts are supposed to happen out here.

Jarrell: In the West, that's right. A few timid voices say this probably has something to do, conceivably, with global warming.

Dasmann: It isn't a few timid voices though, it's the United Nations' best brains brought from all over the world to look at this problem.

Jarrell: They've never practiced water conservation in Connecticut.

Dasmann: They've never thought of it.

Jarrell: They've never even thought of it, the idea that you can't water your lawn in Connecticut. This is a foreign, bizarre phenomenon. But I'm saying, that locally, in this country, a few people might make a connection between this and global warming. On an international scale people are scratching their heads and saying it right out loud. In this country it seems a terrible drought is simply seen as an act of God, a natural disaster. But it's completely separate from all other phenomena, an isolated incident without any human causality.

Dasmann: That's right. God's been pretty busy bringing them on these days. The strange thing is when the global warming issue really got hot, the scientific community who had actually studied the phenomena said there would be an increase in the frequency of catastrophic events, essentially—droughts, floods, hurricane rises in sea level, melting of ice caps, and glaciers. Not just warming, but the only thing that was picked up on was warming. It's going to get warmer

here. Well that's fine, I like warm weather. But the forecast was not for uniform warming all over the globe, but for hot spots and cold spots and blizzards and a whole mélange of catastrophic events.

Jarrell: I saw a program on PBS about the penguins in Antarctica. In this last year there has been a 70% drop in their birth rate. Biologists have been studying this very closely and have decades of data during which they've monitored the penguin population. The reason for this population drop they believe is a drop in the ice pack; ice for penguins is like trees for songbirds. If the penguins don't have enough solid ice pack, they don't reproduce. They said it was unseasonably warm in Antarctica this year. The baby penguins are lying out with their little flappers and little feet extended. They are trying to open up their body surface so that they can expel heat, so they can cool off. They are just lying there panting. The biologist who was working with these penguins said this phenomenon is like the canary in the coal mine.

Dasmann: It's shocking. How long have we had? I first got involved in global warming when I first went to work for the Conservation Foundation, in 1966 or 1967.

The first thing I was aware of, and it might not have been the first thing by a long ways, but the first thing I was aware of were the measurements of atmospheric gasses from the observatory on Mauna Kea on Hawaii, where they've picked up this increase in carbon dioxide over time. That started people looking at this problem and before long we were aware of this global warming potential and the likelihood of all these strange events taking place because of global warming. The worst of it is, well there are so many worsts of it, but one of the worst parts of it is that the chances are that Western Europe is going to freeze. It's going to be colder than hell there in the next while, because of global warming. The worst hurricane season ever will be coming on. But we haven't repaired the damage from the last hurricanes.

Jarrell: At that time when you became aware of what we now call global warming, had they identified the ozone hole?

Dasmann: Well when that came in, I remember writing about it quite some time ago, it must have been in one of the early editions of *Environmental Conservation*, because I had this belief that it was simpler to fix than it was, such as eliminating spray cans and freon. But the freon and air conditioner stuff is really the big

bottleneck, the big block of doing away with these, what is this stuff now, it's slipped my mind—freon. We could certainly use carbon dioxide in the spray cans instead of the gases they use in them now.

The Next Generation of Environmentalists

Jarrell: Who are those in the next generation of thinkers who are thinking globally, who are thinking deeply about these matters that you have so brilliantly put together in your way. What people should we be on the lookout for, people who are making important contributions?

Dasmann: We have the new book *Farewell Promised Land: Waking from the California Dream*, by the photographer Robert Dawson and the historian Gray [A.] Brechin.[16]

Jarrell: Do you think that these two have made a big impact?

Dasmann: I think they have. They've done a great job with that book. Oh, there are so many now. Then there are the people I work with on the Golden Gate Biosphere Reserve Association who are very good. They are a generation younger. On the ocean side there is Edward Ueber, who is in charge of the National Marine Sanctuary from the Gulf of the Farallones north. He's probably also in charge of the area all the way down to Año Nuevo, where the Monterey group takes over their marine sanctuary. But he's very good. He's got it together.

Jarrell: Why is he very good?

Dasmann: Because he's aware of all these problems and trying to do something in his organization, the National Oceanic and Atmospheric Administration. I just mention him as one. But coming out from another side, there is Melissa Nelson, head of the Cultural Conservancy. She's just got her Ph.D. from UC Davis. She is very well informed about what's going on, I think; she's taking it from the Native American point of view. She's a Chippewa/Ojibway Indian. Then there's Christine Shonewald who's really expert on protected areas and the problems associated with them. She did an excellent paper on boundaries and the effect of creating a boundary on both the protected side and the side that's open for exploitation.

Jarrell: What's her field, background?

Dasmann: She's a biologist, ecologist, essentially. Conservation biology is really the field I would put her into right now. Although she would probably argue with me about that. She would argue with me about anything. Anyway, she's a lot of fun. She's one of the finer people in the younger generation. Kids like you in the younger generation.

Jarrell: These are more local people. They are concerned with California. Are they also active in a national way?

Dasmann: Yes, they are.

Jarrell: They are a nice mixture of writing, scholarly work and activism. In your generation, I think it was the exception more than the rule where somebody would be involved in both the scholarly side of things and the activism. Whereas it seems this generation has integrated those sides of themselves in a different way. It used to be that professors, with a few exceptions, weren't supposed to get involved politically, right?

Dasmann: Yes, I remember those days. But I didn't pay any attention to them.

Jarrell: Right, you were one of the exceptions.

Jarrell: I guess the first post-war group was *Bulletin of the Atomic Scientists* established by physicists who had worked on the Manhattan Project who started becoming socially and politically conscious, active about the dangers of the nuclear age, and nuclear weapons. That was the first time I'd seen scientists . . .

Dasmann: Come out of their offices and . . .

Jarrell: Absolutely. Out into the public arena.

Dasmann: They are much more inclined to do it now, and not suffer the consequences, which they used to suffer. They'd be passed over in promotion, or lose their jobs. But that fortunately has changed a bit. But it's still there.

Jarrell: What would happen, using the University of California as an example, if you were a young assistant professor going through your seven years prior to tenure? I would imagine you would keep your powder dry and you'd maybe not be so inclined to be terribly active? Do you think it would still be a threat to your career now?

Dasmann: Absolutely. They might excuse you for being active, but when it comes to promotion time, they ask what you've contributed to journals in your

field. That professional journal stamp of approval on the work you've done is what makes you promotable, or not promotable. It's all right if you want to do something like writing books on the side or giving talks on the radio. That's not held against you, but it's not serious. A serious thing is a properly edited, peer-reviewed scientific publication. I hate it. I really think it's a bad influence. The thought of being a young assistant professor these days hoping to climb that ladder would be frightening. I'd rather go into business, where I could sell hot dogs or something.

The regulations get tighter and tighter in an attempt to really force your nose to do just the kind of research that you're supposed to be doing as botanists, zoologists, geologists—and to stay out of controversial areas. If you produce a scientific publication that ten people may read you've done your job properly. But if you give a lecture to a thousand people, forget it.

Jarrell: I want to thank you, Ray, for participating in this oral history.

Appendix I: Dialogue with Ecology Students

Ray Dasmann was guest lecturer in Larry Ford's UCSC class in environmental studies, "Introduction to Ecology," on July 13, 1999, and answered students' questions.

Larry Ford: How about if I ask the first question. I think everybody here is curious about how their own career is going to develop and they are still making some decisions. I think they would like to know about your training, Ray. How would it be different today if you were going back to school with the same career goals in mind?

Dasmann: I became interested in wildlife when I was a child and was fascinated by wild country, wild animals. How did I get where I am? How do you get to where you want to be? I don't have a clue, really. It's chance and opportunity, opportunism and good luck, and all kinds of stuff that I had no control over. When I started out I wanted to do something pretty simple, to study wildlife and maybe to work for the California Department of Fish and Game or the U.S. Fish and Wildlife Service, where I'd be out in the field all the time and working with animals.

You can do that for awhile and then you get promoted or fired, one or the other, and you have to move up. You start spending your time at desks, at meetings and at conferences and boards of supervisors, at the city council, at the state legislature, trying to do something for the wildlife that you are interested in so there'll still be wildlife to study when you get around finally to going back into the field. The higher you go, the less you are related to what it was you thought you were doing in the first place. I had no idea of ever being a professor. If you'd asked me when I was a kid, would you like to be a professor? Well, I didn't even know what one was, but if I knew what one was, I would have said, no, that's my last choice. I had no intention of writing books. I didn't think I could. So I ended up writing a whole mess of them. In fact, that's what I'm doing now when I'm at home, is working on a book.

Ford: So you went to UC Berkeley as a graduate student.

Dasmann: I went to UC Berkeley at the time when ecology was really not even taught as such; it entered into the program through certain courses, but there wasn't anything you could say was close to a major in ecology. I was a major in

zoology, which is where the wild animals were, of course. So I got into wildlife, which started at UC Berkeley when Starker Leopold came to Berkeley to start teaching. He had the first course in wildlife conservation and management at Berkeley and that was really almost the start of it in California and even in the United States. But there were one or two courses, actually, that Starker taught and then there was another ecologist, Frank Pitelka, who was more oriented toward non-game, not hunted or fished, wildlife. Between the two of them I got a pretty good view of ecology. Then later I managed to take a course in the forestry school on plant ecology and they all added up to some background in ecology, which was an interest of mine right from the beginning.

Ford: How did you decide to go to graduate school?

Dasmann: That was interesting. My wife and I decided after long debate and consideration that when I got a bachelor's degree and had finished with the wildlife courses, that I'd continue on to do graduate work. Starker Leopold asked me if I would be interested in taking part of a statewide survey of California deer, because deer had become a problem, and the State Department of Fish and Game was interested in getting an outside, impartial view of what the situation was. Were there too many deer, too few deer, what was going on? What was happening to their habitat? So the first job that was a wildlife-related job was something I just walked into because I happened to have gotten the highest grade in the course, and wrote some good answers on questions and tests and managed to make myself known to Starker Leopold.

So I then did the statewide survey of deer and deer habitat, deer ranges, and was able to use part of that work as my master's thesis. So I was paid to do this work for the state of California while at the same time getting a master's degree out of it. It was a good deal. From there my wife and I faced another big question: whether or not I should just go work for the Department of Fish and Game at the time or go on to get a doctorate degree. Once again, we had a tremendous soul-searching and decided that I should go to work for the Department of Fish and Game and forget about going for a Ph.D. Then we had a sleepless night and changed our minds again and I decided to go for a Ph.D. Starker Leopold said okay, good. So he was the one who kept me on track.

Where did I go from there? I got the Ph.D. based on an intensive study of deer in Lake County investigating the effects of controlled burning or prescribed

burning on deer habitat and deer populations. We were doing this study in Lake County where some areas were being burned and some were not being burned and you could see the difference between the deer population in the different burn histories of the region. So that then led to a paper on the behavior and population ecology of blacktail deer, which was my doctoral thesis. Then I went into teaching, because that was the best job that was available. I didn't have any money at the start, and I still didn't have any at the finish, but managed to get these things pieced together so that I could be supported all the way through to a greater or lesser extent. Then my wife worked part of the time and we just kept going on.

Ford: I think we're all curious to know how you became involved in some of the major conservation groups. I know you started to get involved in thinking about some of the new paradigms, the new frontiers in conservation. I think we'd like to know how you came up with these new ideas about ecodevelopment and sustainable development. What were you exposed to that showed you that these were important, new directions to go?

Dasmann: Well to begin with, I didn't do this on my own. I was building on work that had been done previously by other people who had written a great deal about these human problems, had sought and come up with good answers. These are the people who inspired me and I built on their work rather than just starting in by myself and trying to come up with some brilliant ideas. How did I get to considering ecodevelopment? Because of the people who were actively working in these areas. Jimoh Omo-Fadaka from Nigeria became a good friend of mine and had ideas which influenced me. I met him at a population conference in Bucharest. I worked with Robert Allen, a writer for *The Ecologist* magazine in England. I was able to pull together some of their ideas and present them in a way that was perhaps more understandable to the world in general. But I didn't come up with ecodevelopment on my own. Someone suggested the term to Maurice Strong, who was head of the United Nations Environment Program at the time. He used it in his introductory speech as head of that program. Then he realized he didn't quite know what it meant and asked to put together a group to consider what ecodevelopment was all about. We worked on it for quite a time and then I began writing about it. But I didn't come up with it on my own; it's always building on the work of others and the others go back well into the past. I can hardly take credit for the Man and the Biosphere

Program. I had these resources to draw on of people who were available to me. The fact that they were available to me was in itself quite fascinating and interesting. But these ideas develop over time.

Nicole Foster: I was interested in your advocacy in behalf of indigenous people, particularly when you said this was at a time when most people weren't really interested in that. Where did that idea come from, where the First World is starting to view indigenous people as a positive factor in the environment?

Dasmann: That's a big subject. One starting point was when I went to work for the International Union for the Conservation of Nature in Switzerland. One of the first jobs I took on was to look at the definition of national parks and equivalent reserves. The IUCN was responsible for putting out the United Nations list of national parks and equivalent reserves. This was based on a detailed analysis of whether each reserve met the requirements for a national park. Now, these national parks were mostly set aside on what we call the Yellowstone model because the original national park in this country was Yellowstone. So one of the things that they required for national park status was that people not be living in it. Now, this bothered me a great deal and it hit me particularly when I read a book by Colin [M.] Turnbull, *The Mountain People*, about the creation of a national park in Uganda, which meant the displacement of a whole tribe from the land that they had always occupied with no place for them to go. They had to leave the land they knew and they lost everything. It led to total cultural disintegration.

We were in a sense causing this situation because of our definition of what comprised a national park. So I thought we should redefine the concept of national parks and recognize that a place has qualities we consider for a national park which include the fact that people have been taking care of it for hundreds of years. You can't separate people from nature; you can try, but it doesn't work. So national parks that have a full array of wild species and natural vegetation and all the nice things we like to see in a national park are there because they have been either managed in these little subtle ways by the people who live near them or they have been protected by those people. This has been going on for centuries, for thousands of years. So why do we go in and say these people have to leave because this is going to be designated a protected nature area? That was how I got involved.

That led to other activities. In 1973 I was invited to a conference in Cambridge, England, to meet with cultural anthropologists, ecologists, and natural scientists. We came up with the idea of ecosystem people and biosphere people, which seemed to take hold. Ecosystem people being the people who had learned to live within the limits of a particular ecosystem and had become extremely familiar with it over time, had learned how to manage it in a sustainable way, if I can use the sustainable word here. The biosphere people, on the other hand, were those with a global culture who could draw on the resources of any ecosystem around the world, and exhaust it and still survive because they had this network of lines of communication and trade developed. So that you can start in the morning with a cup of coffee from a rainforest in Brazil and have beef from the Midwest for lunch, or if you're a vegetarian, wheat maybe, or rice from God knows where, just continually drawing on the resources of the entire globe, the entire planet. These are biosphere people. They don't know how to take care of the biosphere, but they depend on and draw from it. As compared to ecosystem people, who know how to live indefinitely and have always lived, in this, let's say, rainforest area; they know how to sustain life within that rainforest area. You see the two groups are contradictory in a way. Because the biosphere people have essentially taken over the whole planet now, but there are only little remnants of ecosystem people left who know where things are and where they came from and have lived there for long enough to really be totally familiar with and protective of the area.

Foster: Do you think that since the 1960s that the First World view of the benefits of the way indigenous people live on the land has changed? If people are recognizing it more and not still trying to change it, as you've kind of said?

Dasmann: Well, there are people who are recognizing it more. But the majority of people say, you can't stop progress. Out of our way. We're going to take advantage of this area. I'm sorry but we've got to have the oil from here; we've got to have the wheat from there; we've got to have the timber from here, can these ecosystem people survive? Yes, if given a chance. But will they be given a chance? I don't think so, because we're just steamrolling forward; we're just changing the entire planet. It's scary. That's what I don't like about the term sustainable development. I think it's Michael Soulé who said it is an oxymoron. The terms are contradictory. If you define development the way it's been defined for a long time now, economic development in the usual sense, of increasing the

money flow or the bottom line in sale and use of materials.

S'rai Helmbrecht: I'm wondering how you determine the boundary between an ecosystem culture and a biosphere culture, because it seems that throughout time there have been cultures that occupied a gray area where they certainly didn't impact the planet the way that modern society does but they impacted their environment to where they ended up disappearing or to where they did cause permanent changes to the environment. How does this question have value for us as a modern society to try to live more sustainably or to try to incorporate elements of ecosystem living and looking at where is the boundary between being an ecosystem culture or transforming an environment beyond repair?

Dasmann: I see the problem and it worries me a lot, too. For example, I would say that the Maoris of New Zealand were ecosystem people in a sense. They learned how to use the resources of their island without damage to them in the long run. But getting to that point they had wiped out the moas; they had wiped out other species. They had incredibly changed the New Zealand environment. That's the trouble, you see. An invader, whether it's an animal or a plant or a human, tends to not know anything about the land that is being invaded and in the case of humans, modifies it without knowing whether the modifications will work in the long run. So there's a period of destructive impact that follows the invasion of exotics. You see it with exotic species of plants, that when you introduce them they begin to devastate an area by overcompeting with the native vegetation. You see it with people, too. This invasive phase is always potentially destructive to the original ecosystem that was there before the invader came in. But in the case of ecosystem people that I was talking about, they have been in place long enough to know that they can't overuse this resource or that resource whether its an animal or plant population, and still survive. They've learned that from experience. So they have developed this balanced approach to the environment, their way of life. But we're up against an invader psychology now, in a sense. People are moving into new areas. They are having destructive effects. They are introducing things into new areas that have never been there before and causing a great deal of concern.

Sean Furlong: What do you think is the biggest ecological problem the world will have to deal with in the next century?

Dasmann: I wish I knew. I'm concerned about how we're going to get through

the next ten years. Just look at this situation with global warming. We have to stop this; we have to stop this accumulation of carbon dioxide and other similar gases in the atmosphere. We know that. At least some of us know that. Others are in denial about it. They say it is just not there or that the data is wrong. They say that when there is a tornado hitting here and there's a flood over there and there's a massive fire in this other area but somehow they manage to go along as if these things weren't happening. Yet long ago, in one of my earlier writings, I talked about global warming and its effects, and how it's the frequency of catastrophes that's going to be involved first. Well the frequency of catastrophes is now higher than it's ever been in recorded history. But there's this unwillingness to say, hey, you've got to get off these petroleum-based, coal-based, hydrocarbon-based sources of energy and get to renewable solar energy or some other means of going ahead. This is one of the big issues for the present time. When I say I don't know if we're going to get through the next ten years, let alone the next century, I'm glad I went through university when I did. Your future scares me, kids!

Shebreh Kalantrari: Can I ask a related question about solar power? Why do you think there's been so much resistance to looking at solar power as a source of energy? We've put money into wind and hydro and other forms beyond coal-based or carbon-based energy, but there's very little since the Carter administration that's been put into solar power. What do you think are some of the driving factors for that? Do you think this situation is going to change?

Dasmann: I find that human greed is a driving factor in an awful lot of these issues, with a willingness to close off a vision of anything bad that might happen. People just say I'm doing all right now; I've got mine; I won't worry. Being in denial, is the present term that is used, I guess, a lot to preserve that attitude. Pretend it isn't happening. It hasn't hit you yet, has it?

Trish Sparling: What do you see ecologists doing? Do you see them tackling these problems?

Dasmann: Well some are and some aren't. Ecology is such a difficult area to fit into a university because of the departmentalization. But the fact is, that a physicist has to write things that are directly related to physics research and they are at the cutting edge of thinking, and if they start worrying about environmental issues they get led out of the straight physics pathway and over

into peripheral areas. Then they don't get promoted. They get fired. That's a difficult one.

Shawn O'Bryan: This question will be easy. I want to know what you thought of working for UNESCO and how effective it was in solving some of these problems?

Dasmann: Well, considering that we—the U.S.—never pay our dues to the organization and they get by with very little money and have to stretch themselves all over the whole planet, they do very well. But it's frustrating to work on programs and put a lot of time and effort into them and then not have any support for them from the governments that originally asked for them. But the Man and the Biosphere program, we all worked on that. There are experts from all over the world working on that, putting together projects that needed support and needed attention from around the whole human environment. But when a bunch of us got together finally and figured out how much it would cost, it seemed a reasonable amount would be around $50 million dollars. That's not a big amount when you are dealing with global issues. But what we finally got when the budget people went to work on it and the government representatives, the ones with the actual power to change things, was only $500,000. Now, there's a big difference between $50 million and $500,000. With $500,000 you can just barely keep a secretariat going in Paris, which is the headquarters, let alone get anything done in the field. This is the problem you're up against with international organizations all the time, and with international efforts at conservation. In an article in the *San Francisco Chronicle* this Sunday, they had a whole big section on the falling apart of the California state parks, the fact that they are deteriorating because the budget has not been approved and they have been getting by with less money, less people, less resources to do the job. What can you do? Beat on the table or go talk to your representative?

Trish Sparling: I want to know, looking back over your career, what your favorite pet project or discovery was?

Dasmann: I guess what I liked best of all was studying wildlife in Africa. That was my favorite project in the sense of the one that seems to have gone somewhere other than just around a restricted circle. I think the biosphere reserves are very important tools for getting things done. In fact I think it should be the Earth Biosphere Reserve, including the whole planet, because it allows for

every kind of activity, as long as it's kept in balance. Dave Brower has already called for Earth National Park but I think I'll stay with biosphere reserve. It's a little more flexible.

Ford: Great, thanks a lot. I really appreciate it.

Dasmann: Thank you.

Appendix II: Ending the War Against the Planet

Dasmann gave this talk at a conference at Mills College, in Oakland, California, in 1982.

There is one goal for the year 2000 that we must regard as essential. By that time every major economic activity we are engaged in must be ecologically sustainable, or well on the way to becoming so. There is no other option if we wish to continue to inhabit this planet. We're running out of time.

It is difficult to look at the state of the world today and find much to be cheerful about. Obviously we live with a continued threat of war, a big war, the final war.

Not everyone seems to realize there is another vicious world war already under way—the war against the planet. It is an ecological war, and the weapons being used are more powerful every day. This war is being won, rapidly. The antiplanetary forces have all the big victories. By the end of the century they will be well on their way toward exterminating the tropical humid forests on earth, with their tens or hundreds of thousands of species. Outstanding victories against the planet Earth are being gained along the edges of the world's deserts. We are told that in some places the antiplanetary forces are advancing the desert edge, creating lifeless land at a speed of 16 kilometers a year. According to the United Nations, the battle against agricultural land is also going strong; by the year 2000, one third of what now remains will have been destroyed.

Meanwhile new recruits flock to the antiplanet armies—around 80 million people are added to the world's population each year. When this war is finally won, the consequence will be as severe and irreversible as though we had fought a nuclear war with the Soviets. It is strange how invisible the war is to politicians, even when it is described in the government's own *Global 2000 Report to the President.*

All of this may seem peripheral to the subject of Northcoast 2000, but it is the setting against which you must plan your program. It is the reason I say time is running out. It is the reason why it is foolish to pretend that things will go on pretty much along the lines they have in the past. They won't. There must be new directions, and they must be sustainable. For this region they must take into account the necessity to achieve a maximum degree of self-reliance.

By self-reliance I am not suggesting the region become totally self-sufficient. Self-

sufficiency in a full economic sense is probably both an unrealistic and undesirable goal, since it involves sacrificing the natural advantages of the region in favor of emphasizing activities that are best performed by other regions. At worst, it means going back to what would be for most people involuntary simplicity—doing without too much. Self-reliance, as I see it, involves development of the capacity to supply the basic needs of people—food, energy, water, clothing, shelter—but more particularly taking control of and understanding the processes by which those needs are met.

What you must achieve is the *development* of this region. You have a choice between two ways of looking at the concept of development. The old way, followed during the idiot years of the 1950s and early 1960s, was supposed to benefit the developing countries, but, in fact, it did not. It was successful, however, in its primary objective—the rich got richer. The new concept of the 1980s has been stated by K. Dadzie in the September, 1980 *Scientific American*:

Development is the unfolding of people's individual and social imaginations in defining goals and inventing ways to approach them. Development is the continuing process of the liberation of peoples and societies. There is development when they are able to assert their autonomy and, in self-reliance, to carry out activities of interest to them. To develop is to be or to become. Not only to have.

The same definition can be applied to the concept of ecodevelopment—ecologically sustainable development. Ecodevelopment is based on three premises:

—It must meet the basic needs of people, and in particular the poorest people, before attending to the wants of the well-to-do.

—It must encourage self-reliance and a degree of self-sufficiency in essentials, based on the knowledge, traditions and skills of the people concerned.

—It must be based on a symbiosis between people and nature, to maintain the diversity of the natural world and to provide for diversity in the social world. Through this it can help to guarantee the sustainability of all essential activities.

I would suggest that these premises also be your guides toward reaching your goals of California 2000 and Northcoast 2000.

Appendix III: The Threatened World of Nature*Dasmann gave the Horace M. Albright Conservation Lecture at the University of California, Berkeley, on April 29, 1976. It provides a summary of his synthetic thinking and his approach to the environmental problems facing the world.*

What are we talking about when we speak of a threat to the world of nature? We could go into a long polemic about what is natural and what is not, and whether humanity is or is not a part of nature. I am talking, however, about three types of entities: first, wild species of animals or plants; second, wild communities or ecosystems, meaning those that are essentially self-sustaining and not much modified by human activity; and, finally, those human societies that have developed with and live in a dynamic balance with wild species and communities.

Status of Wild Species and Communities

What is meant by threatened, or endangered? For certain species this may easily be comprehended. The California condor, with a population ranging from 30 to 60 individuals, is clearly endangered. Without complete protection we would expect the species to disappear in a relatively few years. Even with protection it is not secure since small changes in climate or other processes affecting its habitat could obliterate it. Endangerment is less obvious with those species that are relatively abundant, such as some of the great whales. However, we say that they are endangered because with existing rates of exploitation their numbers and rates of increase are insufficient to maintain populations at a level where they are secure. They probably would not be endangered if the rate of exploitation were drastically reduced. When we say that tropical rain forests are on the way to becoming endangered, we are saying essentially that relatively undisturbed primary rain forests are undergoing severe alterations and that, if this continues, we will be unable to find any large areas containing the full combination of plant and animal species arranged in patterns characteristic of primary rain forests.

Such information does not mean that tropical forests of one kind or another are necessarily in danger of disappearance, although this may be true in some areas. It does mean that the old primary forests are on their way out under the kinds of pressures to which they are now being subjected, since once they are severely altered their rates of recovery are slow, and they may in fact be considered as

nonrenewable resources under the conditions that mankind has been creating. Among human societies the threat is to the fragility of most ecosystem-dependent, traditionally directed human cultures when faced with the overwhelming impact of the prevailing global cultures. When habitat, religious beliefs, or social patterns are shattered by outside impact, the society falls apart even though some of the people may survive.

I could spend much time going over the extent to which the natural world is threatened. It is a task of IUCN to maintain some surveillance over the status of wild species and communities. We usually find that results of field surveys show the situation to be worse than we expected. To give a few examples, we maintain the United Nations List of National Parks and Equivalent Reserves. There are approximately 1200 protected areas that meet the standards of that list, and some of them, such as the Greenland National Park of 80 million hectares, are very large areas. However, this year as a result of various surveys we are finding it necessary to remove more areas, which we had previously thought to be well protected, from the list, than we are adding to the list in the form of new areas where protection has improved. Lack of protection, new development plans, and the continuing pressures of population lead to a steady attrition of national park systems in many parts of the world. Secondly, we maintain the world Red Data Book of threatened species, but we find that the status of few species is ever improved enough for them to be removed from the book whereas each year a number of species must be added. We also know that our lists are incomplete and likely to grow at a more rapid rate as more information becomes available. The situation is particularly severe in many, if not most, of the Third World countries—so much so that we tend to treat North America and Europe as relatively secure. But as you know nature conservation is not assured—not even in California.

Perhaps equally disturbing is the decline in wildlife abundance. We are rapidly losing the great wildlife masses that once were taken for granted—the great game herds of Africa or Asia are examples. We are also losing the sight of seemingly endless vistas of undisturbed forest or grassy plains inhabited by their full complement of native fauna and flora. The species may not be endangered, but the feeling of wilderness has gone, and with it the teeming vitality that once in past centuries made the world of nature seem secure against human intervention. Where I am living in Switzerland this seems particularly relevant,

for with the exception of high mountain rocky areas, there is nothing resembling wilderness. I can drive out into the managed forests and recreation areas in the Jura Mountains, less than 30 minutes from the towns that ring Lake Geneva, and soon be walking among roe deer, foxes, and a great variety of smaller animal life. Yet the feeling of wildness has mostly disappeared; there are none of the massive mossy forests of the past and most of the larger and more spectacular animals (wolves, lynxes, bear, red deer, ibex, chamois) are either not there or uncommon. Those species that have survived are secure; conservation is effective, but too much has been lost for a person from western America to feel at home.

Characteristics of Endangered Species

What are some of the characteristics of species that cause them to end up on the endangered list? First of all seems to be the characteristic of endemism and isolation. Certainly the largest numbers of endangered species, as well as extinct species, are common to oceanic islands or those isolated islands on land such as high mountains. Secondly, we find that among animals, and to some degree also among plants, those species that congregate in large numbers are more vulnerable. Good examples are the pack or herd animals, and the colonial-nesting birds. Species that live in small groups or occur as isolated individuals are more secure. The presence of large numbers of anything in any one place causes people to consider ways of exploiting such an accessible potential resource. Thirdly, with the larger animals at least, the inhabitation of open areas in which the species are highly visible is especially detrimental. Species of the deserts, grasslands, or open mountain environments occupy a much longer space in the endangered lists than those of forests or scrublands. This situation has developed particularly since mechanized transportation has become generally available. A fourth characteristic is certainly a genetic rigidity in relation to either habitat tolerance or behavioral pattern. If a lion could just forget that he is “king of the beasts” and behave like the cougar, the species would have a more secure future. A fifth is the inhabitation of specialized but relatively well-known and accessible habitats, among them rivers, lakes and marshes. My list is hardly exhaustive, but certainly the final and most fatal characteristic for a species or biotic community is to exist in an area of rapid human population growth, or one in which a rapid rate of conventional economic growth is a social goal.

Species that inhabited Europe, North America, Australia, and similar areas of the so-called developed world, went through a high period of vulnerability during

the period of European settlement and expansion of human populations and economy. Many became extinct. Now a species can be considered unfortunate if it lives in those Third World countries where the pressure of human population is great, or where governments are committed to a European-American pattern of rapid economic growth and are falling for the promises of quick financial returns.

Are we winning or losing the nature conservation game? To me the evidence is overwhelming that we are losing it. Not only are we losing it, but the rate at which we are losing is accelerating. It is not that we are not trying to win. We spend money in large quantities to create national parks, provide wardens or equipment to protect species, or capture and transplant them to new and hopefully more secure areas, to train professionals in the field of wild land or wildlife conservation, and to influence policy concerning conservation. Yet we all feel we are losing ground. Why are we losing? We all know the conventional answers: the rate of human population growth—4 billion people increasing at 2 percent a year—is putting a growing strain on all of the earth's resources. Simply providing food, clothing, housing, and energy for these numbers is an overwhelming job which leaves little time or space for worrying about nature conservation. While there is truth in this, it is what I consider a globalist answer to the problem. A globalist is a person who looks at the world as though he lived somewhere else—in outer space perhaps. He reaches down and takes samples, gathers statistics, analyzes them, and then diagnoses what is wrong with the planet from this evidence. I think, however, we should get a little more involved.

Conservation and Tradition

Part of the problem is that those who are concerned with nature have tended to follow a traditional conservation approach. The traditional conservationist narrows his vision down to those wild species or areas that are of interest or concern to him. Whether he is a professional expert or an enthusiastic amateur, his visual scope is limited. He may find plenty to do in studying the nesting habits of ducks or the behavior of deer without any confrontation with people who are determined to drain duck marshes. He probably likes to be respectable and acceptable to governments and to the Establishment, and welcome in good society. He does not like to raise embarrassing issues, since he feels dependent on the support of rich people or the government. He certainly does not question the System—the political/social/economic basis on which his country operates.

He may get along quite well as a fellow professional or club member with those who are destroying most of the natural world, since his demands are limited, and of course he recognizes "economic necessity," the needs of the "real word."

This separation of conservation from so-called real life may be associated with a feeling of detachment from the conservation issues themselves. The traditional conservation professional often puts in his 8 hours a day, gathers his information, prepares his reports, turns them over to the appropriate agency, usually the state or national government, and expects *them* to act. When he goes home in the evening he becomes just like his neighbors—consuming excessive amounts of energy, wasting raw materials, living the conventional life of his society. The traditional conservation amateur may spend some spare time in the field and join in the pressure on government to do something about the issues which concern him. The rest of the time may be spent perhaps in the world of business, doing things contrary to his avocational interests, and certainly his life style is not likely to be markedly different from that of his neighbors. The idea that conservation is a total way of life has usually not occurred to the traditional conservationist. Conservation is considered the responsibility of the powers that be—the city, county, state, or national government.

Admittedly the traditional approach to conservation has produced results. It works well enough when there is space enough and time, and when areas can be set aside, or worthwhile laws enacted, which do not really threaten any major vested interest. When space and resources become more scarce and the pressure to exploit grows more intense, the nice guy, fellow professional becomes less effective. Admittedly it is easier for a conservationist to put on the protective coloring of the society so that he can mingle more easily with those whose attitudes or policies he is trying to affect. It is difficult, in our society, to wean oneself from the prevailing ways of doing things: eating junk food from the supermarket, wasting energy, wasting raw materials, consuming unnecessary trivia that the market is pushing at us daily. I am a gasoline junky still, although I know it is not right that I should be burning up the highways going from here to there, but it is hard to kick the habit. Besides, if you try to live the kind of life that all must some day live if humanity is to survive, you are soon labeled an ecofreak, and respectable people surely do not pay attention to such creatures.

Ecosystems and People

To dig a little deeper, we could look back to a period when conservation was really effective. This was long before the word conservation came into use and at a time when the thought that nature might become endangered never entered a human head. In Africa, in the South Seas, most of Latin America, and Southeast Asia—throughout what we now call the Third World—just two centuries ago most people were what I call ecosystem people, that is they lived in communities that were dependent upon and in harmony with their local ecosystems. Indeed, even in North America two centuries ago most areas were inhabited by ecosystem people. Ways of life had been developed that were sustained over thousands of years without serious destruction of nature. These ways of life were reinforced by religious belief and sustained by social practice. People did not consider themselves apart from nature. The species with which they were associated were viewed with reverence or respect; they were not regarded as resources or things. The result was that when people in these areas were "discovered" by European civilization they were living in the equivalent of what we now would call national parks. The impact of European civilization upon these traditional cultures was totally destructive. Millions of the indigenous people died. Thousands of societies and cultures were totally shattered. At the same time the attack on the natural world began and has continued to accelerate.

To compensate in part for this destructive cycle, the modern conservation movement has come into existence in recent years. This activity usually has its beginnings at the national governmental level, and may or may not filter down to the people. It involves the setting aside of protected areas, the passage of laws to protect species, and the establishment of agencies, based usually in the capital. People who once did a reasonable job of protecting nature on their own are driven from the areas that are set aside for nature protection, and naturally enough often take to poaching on the lands that they once considered their own. It is usually a fairly brutal, insensitive approach to conservation that takes little account of the needs or wishes of those people who ultimately will be responsible for deciding whether the system will continue.

One wonders where we got off the track. Europeans were once ecosystem people too. They were a part of their natural world. Writers such as George Leonard and Lewis Mumford have traced the trouble back to the rise of those types of civilization, in Egypt and the Middle East, in which people and other living beings were for the first time treated as things to be exploited. Attitudes changed

from an I/thou relationship to an I/it basis. These civilizations became the means for the material enrichment of a few in one area at the expense of people and resources in other areas. They were not dependent on a single ecosystem, since through political, military, or economic pressure they could harness the people and resources of many ecosystems to add to the material wealth of the exploiting power. In such civilizations, you may recall, conservation of wildlife was a prerogative of the king, who maintained his hunting preserves, and not an activity of the many. This way of life has obviously continued and spread, in one form or another, up to the present day. Now the dominant cultures, far from being dependent on the resources of a single ecosystem, can draw on the resources of the entire biosphere. They are able to centralize wealth in a few places through exploitation of people and resources throughout the world.

At the present time there is certainly reason to question whether conservation can ever be anything except a trivial sideline in political/economic systems which are geared to continued economic expansion and to a growing consumption of material and energy resources, and have as a central concern the enrichment of those who are in favorable circumstances within it. The further irony is that these kinds of biosphere-exploiting systems, and there are capitalist and socialist varieties, apparently are following a course that cannot be sustained and must be modified, since the continuation of present trends would lead to an exhaustion of energy and material resources, both living and non-living. Yet, unless this modification comes relatively soon, it will be too late for many species and perhaps for restoring many natural communities upon which the continuation of many possible human ways of life would depend.

What are the ways out of this dilemma?

Ecological Responsibility and Involvement

To begin with, I believe we must restore the sense of individual responsibility and involvement, and get away from the idea that conservation is the responsibility of somebody else—the federal government, the state, the corporations, the rich. We must each face up to the need of developing an ecologically sustainable way of life; we need to look at our patterns of consumption and behavior and shed those practices that contribute to the continuing destruction of nature. This is easy to say but incredibly difficult to do in a society which is oriented toward consumption, ever-growing material

enrichment, and waste. I certainly have not succeeded in abandoning all my bad habits, but it is more difficult for people who have grown up in my generation since my bad habits are more deeply ingrained. But without that total involvement, words become meaningless. The rain forests of Indonesia are not being cut down because the Indonesians have an incredible appetite for wood. The wood and other forest products are being sold to us, to Japan, to countries in Europe and to other developed nations. If we stop buying, the Indonesians will stop cutting, or at least greatly reduce the rate of destruction, and start thinking of other ways to use that land. We are not facing a petroleum shortage because petroleum is evaporating. Stop burning it up so fast over here and the resource may last a very long time. How much rain forest would be saved if we stopped eating bananas?

Part of the individual change that is essential is the need to stop thinking of living beings as things to be manipulated or exploited and recognize that they are partners in a community of fellow beings. We must start trying to develop that "reverence for life" that Albert Schweitzer called for long ago. When dealing with nature we need to lose some of our much-vaunted objectivity (which is useful only for certain purposes) and develop a greater subjectivity, empathy, feeling. This does not mean we stop using plants or animals for food, but it does change the approach that we have to the process and begins to prevent gross excess.

A third step for those who are in a position to do it, and not everybody is, is to find like-minded people and start developing ecologically sustainable communities, communities that can gradually become unhooked from the waste-and-pollution-producing systems that prevail in the society at large. In such communities one must use the tools and technology that are now available to develop alternate technologies offering greater promise for survival.

These are only beginnings, but they are essential beginnings. While they are going on, other things must be happening also. Obviously the government, the corporations, industries, and the consumer society are still there. They have to be influenced and changed so that the whole system begins to be turned around in ecologically sustainable directions. Throughout the nation what is needed is an increasing degree of local and regional self-sufficiency leading to self-sufficiency for the nation as a whole. I am using the term self-sufficiency in a relative sense. Total self-sufficiency would probably be pointless. There is no need to give up

trade and commerce, or to cease consumption of things that are produced elsewhere, but there is a need to get out of a state of dependence on the exploitation of other people, places, and living communities.

Ecodevelopment

It has been said repeatedly by the Third World countries that conservation can only be accepted if it is part of economic development. Conservationists have tended to agree, but we must qualify the statement by saying that conservation is part and parcel of ecologically sustainable development (ecodevelopment) and that is the only kind of development worth pursuing. For the industrial world this means redevelopment—in a sense, the redevelopment and resettlement of America. For countries that have not yet gone too far along the European-American path, the opportunity is available to follow a different one. They can start now with locally based, decentralized, people-oriented, ecologically sustainable development, which can enrich life for all and lead to a new dynamic balance between humanity and the natural world.

What I have been trying to say is this: the conservation of nature cannot succeed unless we change the system and restructure society. Conservation of nature is an integral part of ecologically sustainable development, and from here on we must pursue ecodevelopment or redevelopment directions as quickly as possible. None of this will happen, however, unless there is first of all a change in the hearts and minds of individuals—you and me. The government is not suddenly going to become inspired to change the direction of society. We change first, and then we can begin to influence governments.

You may say that the job is too difficult and cannot succeed, that people are too resistant to change and unwilling to give up their present ways of doing things. However, the ways we have been following will not succeed, so we had just as well get started on ways that have some hope of success. None of us can speak for other people; we can only speak for ourselves. It may be that we cannot prevent catastrophes from happening to people and the natural world, but we can begin to set up survival centers so that at least those areas, people, and other living creatures over which we can have some influence and control have a chance of pulling through.

Finally, I must apologize to you. It has taken me a lifetime to learn some of the things I have been saying to you. Some of the people in this room who are 20 to

30 years younger than I learned all of this 10 years ago. I am obviously a slow learner, but I promise to keep trying. If I sound like a 1960s re-run, it is because that is what I am. Everything I have recommended here is already being done by some people, and their numbers are growing. Some of them are in this room tonight. This is what makes it so worthwhile to return to California.

Appendix IV: Concluding Remarks, Symposium on Biodiversity of the Central California Coast

Dasmann's concluding remarks from the Symposium on Biodiversity of the Central California Coast outline the state of this biosphere region in 1995, the development of which has absorbed him since his retirement from UC Santa Cruz.

A panel discussion with audience participation ended this symposium and attempted to answer the question "Where do we go from here?" Members of the panel were the moderators of the previous sessions: Nona Chiariello, Edward Ueber, James Barry, Judd Howell, Douglas Nadeau, and Huey Johnson. This paper reflects on the comments of those individuals, as well as other ideas and suggestions, and the author's concluding remarks.

Nona Chiariello set the tone for the panel discussion by recalling some of the comments by the opening keynote speaker, Peter Raven. "If not here, where?" California contains the richest biotic province in the nation in terms of plant and animal species and ecosystems. If we cannot protect biodiversity here, with a human population that is culturally diverse, relatively well educated, and relatively strong economically, where can we succeed? Yet we have not managed to make most people aware that a biosphere reserve exists, or why they should care about biodiversity. There are those who think the biosphere is a strange, glass building near Tucson and cannot comprehend why there should be a reserve for it on the California coast. Yet, even school children are well aware of the need to protect the environment, but in general lack understanding of the scientific basis for effective environmental protection.

Huey Johnson pointed up the need to develop among people a deep commitment to protect our "precious heritage" represented in the biosphere reserve. He recalled the commitment of the Austrian people during World War II, who refused to cut the trees in the Vienna Woods even when suffering from severe cold and a lack of fuel.

Outreach to a Culturally Diverse Population

The San Francisco Bay Region supports people whose ancestry is in virtually every country in the world. The cultural diversity is unusually strong and many of those people make some use of the biosphere reserve. Ironically there are over

25 million visitor days use per year in the national park units of the reserve, and over 10 million in the marine sanctuaries. Yet only a minority know much about the national parks or sanctuaries, even though they are attracted to them, and they know less, if anything, about the biosphere reserve. Even within the reserve many of the employees and volunteers who work with national or state parks know virtually nothing about the Biosphere Reserve. This was brought out in the remarks of Douglas Nadeau, Christine Schonewald, Carleton Ray, and others.

Undoubtedly the biggest problem that we face is the lack of public outreach by those involved with the Biosphere Reserve. There is an obvious reason for this deficiency. The Biosphere Reserve has no money, no office, and no permanent staff. Those who volunteer to work with the Biosphere Reserve Association, on the Board of Trustees, the Advisory Councils, or on projects such as this Symposium donate their time and energy. There are limits to what they can give to this cause since most have other full-time occupations. All of the nine agencies that administer the 13 units of the reserve have suffered from budget cuts and are hard-pressed to carry out their legal and regulatory responsibilities.

Without money we find it difficult to develop outreach programs. Without the outreach we find it difficult to raise money for an organization that few have heard of. This is the problem, which we must consider a challenge that hopefully will lead to an opportunity for success.

Extending the Boundaries

There has been considerable discussion of the need to extend the Biosphere Reserve to include other areas. There would be few problems associated with moving the oceanic boundaries southward to Point Año Nuevo, since the northern half of the Monterey Bay National Marine Sanctuary is already administered from San Francisco along with the Gulf of Farallones National Marine Sanctuary. Nor do I believe there would be any opposition to adding Big Basin State Park and the Año Nuevo State Reserve, since this has been suggested already by Jim Barry. Personally, I would advocate developing the Biosphere Reserve to form a green barrier to urban expansion surrounding the urbanized areas of the San Francisco Bay Area. This would include all the state, county, and regional parks along with the San Francisco Bay National Wildlife Refuge. All of the protected units exist. They need only to be tied together under the Biosphere Reserve designation. The question is when should this take place? We are having

trouble enough getting 13 units and nine agencies to work together. Would we be more effective if the number of units and agencies were greatly increased? In the long run the answer would probably be affirmative. But when?

Working Together

One of the strongest features of a biosphere reserve, and in particular a multiple-unit, multiple-agency reserve such as ours is that it provides a vehicle for cooperation and collaboration among the agencies, organizations, and people involved. Such a vehicle should make it possible for all to operate at less cost, trading knowledge and expertise, and learning from the experience of others. Yet, it has been pointed out by William Gregg and Laurie Wayburn, that relatively little advantage has been taken of this vehicle. Among the many challenges that require such collaboration are the following:

Exotics

The spread of exotic species is a problem for each of the agencies since these often displace native species. Wild hogs do serious damage to native ecosystems. Scotch broom is widespread, displacing native species. Grasslands are dominated by introduced species. A multi-agency approach to this problem is essential, recognizing that the California Department of Fish and Game has a major role.

Fire Regimes

There is an obvious need to restore natural fire regimes, both to prevent destructive wild fires and to maintain fire-dependent ecosystems. This is best carried out as a collaborative exercise involving particularly the California Department of Forestry and Fire Prevention.

Ecological Restoration

It is essential to carry out ecological restoration, particularly involving streams and estuaries, but also in upland forests and grasslands. There is a need to study grazing practices, working closely with ranchers, to achieve or maintain grazing systems that are ecologically and economically sustainable as well as protect natural biodiversity.

Neglected Species

Although we have a reasonable amount of information on vertebrate biodiversity

we have scarcely addressed the role of invertebrates, particularly insects, in the ecosystems of the reserve. All agencies should combine in encouraging research on insect biodiversity and population ecology.

Broader Issues and Concerns

Some years ago Paul Ehrlich pointed out that much of our conservation-oriented activity amounted to rearranging the deck chairs on the *Titanic*. The iceberg with which we would collide was the growth of human populations which, unless it was controlled, would override all of our efforts toward preserving the environment.

Maybe it is significant that an ice mass said to be as big as the state of Rhode Island has been reported recently to have broken off the Antarctic ice sheet and to be floating free. Perhaps we should take that as a warning, added to countless other warnings, that all is not well with the world environment. Unfortunately what we hear from our government, and I mean Congress in particular, is that they are rearranging our deck chairs to block access to the life boats.

We should not take just one iceberg, no matter how big, as evidence of forthcoming disaster. But there have been so many other indicators that all is not well. We seem to be encountering, around the world, the coldest or the warmest winters, the warmest or the coldest summers, the heaviest or the lightest snowfall, major floods and major droughts, more and fiercer hurricanes and typhoons, a growing number of tornadoes. These climatic events were predicted as likely consequences of continued global warming. Apart from climate changes there is growing desertification and deforestation, and everywhere a loss of biodiversity. Norman Myers has pointed out that there are now over 25 million environmental refugees. These do not include war refugees, although the two are related; but people who have left their homelands because their natural resources can no longer support them. We see it here on the Mexican border.

The polls indicate that a large majority of people favor more, not less, environmental protection. However, a majority of voters elect representatives who are out to undo environmental protection. We are experiencing a convergence of environmental crises that will, before long, exceed our ability to repair or restore the damage. How many more environmental refugees must we have, whether from floods in the Mississippi basin or Bangladesh, droughts in California or Zimbabwe?

Biodiversity—A Central Concern

In this symposium we have been primarily concerned with just one big question—how we protect and maintain biodiversity in the Central California coastal region, and in particular the core areas of the biosphere reserve. Yet, when we begin to answer that question we find it is tied to all other environmental issues. In the open ocean part of the biosphere reserve, we find that commercial fishing is an ongoing problem. We have not had much success with preventing overfishing. With the ongoing depletion of world fish resources the pressure from foreign fishing vessels poaching in U.S. waters will grow. Closer to shore, pollution becomes a more serious problem, and this ties in with the use of terrestrial resources and the disposal of our wastes. The bays and estuaries are centers of biodiversity loss, but their problems often originate well inland in the fresh-water streams that flow into them, streams in which biodiversity loss is already severe. Since stream quality depends on watershed quality, we find that solutions to coastal marine biodiversity may depend on land use and care as far inland as the mountain summits, even as far as the Sierra Nevada.

On land we find that retaining biodiversity in our migratory bird populations involves the protection of rainforests in Central America. At sea our gray whales and dolphins depend on the care given to Mexico's bays and the methods used by Mexican fishing fleets. In a sense, then, biodiversity is an indicator of the fitness of the environment everywhere. A decrease in biodiversity indicates a decline in environmental fitness and through that ultimately a decline in the quality of life for humans.

For most of us the solutions to these big problems are beyond our reach. We can only carry on with the work we are committed to, give what help we can to the organizations that are confronting the larger issues, and perhaps above all vote for environmentally committed candidates for public office.

To end on a lighter note, among the many issues brought out here in this symposium was one that can be solved here and now. The name of the Central California Coast Biosphere Reserve has officially changed to the Golden Gate Biosphere Reserve. This has been approved by consensus of the Board of Trustees of the Biosphere Reserve Association and has met with approval all the way up through the Washington office and UNESCO in Paris. This is not a trivial

change although there is an obvious advantage in reducing the number of syllables in the name. More importantly the Golden Gate itself represents a meeting between land and sea, between open ocean and enclosed estuary, and between an urbanized, diversified human population and the world of nature. All of these are central to the concept of biosphere reserves.

Appendix V: Raymond F. Dasmann: Selected Publications

Dasmann's publications include over a hundred books, scientific papers, reports written for UNESCO, the World Conservation Union, and the Conservation Foundation; and pamphlets, articles, and bulletins. The brief listing below includes books for students and the general reader interested in ecology and environmental issues.

California's Changing Environment, Sparks, Nevada: Golden Gate Series, 1988.

The Conservation Alternative, New York: Wiley, 1975.

The Destruction of California, New York: Macmillan, 1965.

A Different Kind of Country, New York: Macmillan, 1968.

Environmental Conservation, New York: Wiley, 1984 (fifth edition)

The Last Horizon, New York: Macmillan, 1963.

No Further Retreat: The Fight to Save Florida, New York: Macmillan, 1971.

Planet in Peril: Man and the Biosphere Today, New York: World Publishing, 1972.

Wildlife Biology, New York: Wiley, 1964.

[1] The IUCN is also known as the World Conservation Union.

[2]Russell E. Train founded the African Wildlife Leadership Foundation in 1961 and later became president of the Conservation Foundation where Dasmann worked with him. In 1969 President Nixon appointed him Undersecretary of the Interior where he was involved in the controversy surrounding the Trans-Alaska pipeline. Train urged congress to create the Council on Environmental Quality, which could identify major environmental problems and craft federal policies to aid in their solutions. Nixon appointed him president of this council, and in 1973 appointed him administrator of the Environmental Protection Agency.

[3] New York: W. Sloane Associates, 1948.

[4]The U.N. Conference on the Human Environment was held in June, 1972, in Stockholm, Sweden. One of the most significant results of the conference was the establishment of the World Commission on Environment and Development, known as the Brundtland Commission, and named for its chairman, Gro Harlem Brundtland, Prime Minister of Norway. The commission's 1987 report, *Our Common Future*, called for the Earth Summit (U.N. Conference on Environment and Development) held in Rio de Janeiro, which recommended "sustainable development" as a primary goal.

[5]The Society for Conservation Biology was founded in Ann Arbor, Michigan in May, 1985. The first issue of its journal, *Conservation Biology*, was published in May, 1987.

[5] Martin Holdgate, *The Green Web*: *A Union for World Conservation*, (London: Earthscan Publications, Ltd., 1999). p. 99.

[7]R.H. MacArthur and E.O. Wilson, *The Theory of Island Biogeography*. (Princeton, New Jersey: Princeton University Press, 1967.)

[8]The Society for Conservation Biology was founded in Ann Arbor, Michigan in May, 1985. The first issue of its journal, *Conservation Biology*, was published in May, 1987.

[9]In "The Tragedy of the Commons," *Science*, 13, December, 1968, pp. 1243-48) Hardin's thesis held that the growth of human population would result in increasing environmental degradation and overexploitation of finite resources at both the local and global levels.

[10]General Mobutu Sese Seko of Zaire seized power in a coup in 1965, and was ousted by rebels in May, 1997.

[11]Dasmann was chairman of environmental studies and provost of College VII[I] from 1981-1984.

[12]Huey Johnson was Secretary of Resources for California from 1978 to 1982, during the administration of Governor Edmund G. (Jerry) Brown, Jr., and advised the governor on

environmental programs and policy. During the 1960s he was the Western Regional Director of the Nature Conservancy and in 1972 founded the Trust for Public Land, the country's fifth largest environmental organization.

[13] E.F. Schumacher, *Small is Beautiful: Economics as if People Mattered*. (New York: Harper & Row 1973).

[14]In 1983 the Grameen Bank in Bangladesh pioneered the idea of microcredit, small loans given to the poor without a demand for collateral. The amounts are usually $200 or less and generate small home businesses.

[15]Dasmann's autobiography, *Last Call for the Wild*, will be published by the University of California Press in 2001.

[16]Berkeley, Calif.: University of California Press, 1999.

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Randall Jarrell, who edited this volume, was born in Los Angeles and lived in the San Francisco Bay Area until moving to Santa Cruz in 1970. She received her A.B. in History from San Francisco State University in 1969; an M.A. in History from the University of California, Santa Cruz, in 1978; and an M.A. in Clinical Psychology from the University of San Francisco in 1987. She worked as a journalist before her appointment in 1974 as director of the Regional History Project.

Irene Reti, who transcribed and coordinated production of this volume, was born in Los Angeles and moved to Santa Cruz in 1978. She received her B.A. in Environmental Studies from UCSC in 1982, and has worked for the Regional History Project since 1989. She also runs HerBooks, a small press publisher of creative writing.