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Burney J. Le Boeuf, Professor of Ecology and Evolutionary Biology: Recollections of UCSC, 1966-1994

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Burney Le Boeuf, Professor of Ecology and Evolutionary Biology
Recollections of UCSC, 1966-1994

Interviewed by Randall Jarrell and Irene Reti

Edited by Irene Reti

Santa Cruz

University of California, Santa Cruz

University Library

2014

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Interview History

Burney Le Boeuf was born in southern Louisiana. He attended UC Berkeley, earning his PhD in experimental psychology in 1966. While at Berkeley, he also studied zoology and experimental biology. He arrived at UCSC in 1967 as a member of the psychology board and of Crown College. He already had a strong interest in evolutionary biology and participated in the biology board's meetings as an outside member. He also began working with biology professor Richard Peterson on seal and sea lion research. After Peterson's death, the biology board invited Le Boeuf to take Peterson's place on the board, and he accepted.

Le Boeuf is internationally known as a pioneer of the field of marine mammal behavior. He has focused on the social and reproductive behavior of elephant seals (*Mirounga angustirostris*), as well as their diving, foraging, and migratory behavior. Le Boeuf has conducted extensive research on the behavioral ecology and physiology of a variety of marine mammals, and also investigated the effects of environmental pollutants such as DDT on marine mammals.

Much of Le Boeuf's research on elephant seals has been conducted at nearby Año Nuevo Reserve, which is only twenty-five miles north of Santa Cruz. Le Boeuf began doing research at Año Nuevo Island in the late 1960s. A team of UCSC undergraduate and graduate students worked with him. In 1975 the first elephant seal pup was born on the mainland on a beach managed by the California Department of Park and Recreation. The presence of elephant seals, the largest males of which weigh up to 4500 pounds, fighting, mating, and giving

birth on a public beach within an hour's drive of the San Francisco Bay area was publicized by *Sunset Magazine*. The article quickly drew thousands of excited visitors to come see the seals, a few posed their children literally on top of the seals for photos, many approached the seals too closely for safety, and generally put both themselves and the seals in danger. The one part-time ranger assigned to the area was completely overwhelmed.

Professor Le Boeuf stepped in with an offer of student help from UC Santa Cruz. He designed *Natural History of Año Nuevo*, a two-quarter experiential course offered through the environmental studies board. The first quarter, students studied the history, botany, intertidal biology, ornithology, geology and other aspects of the Reserve; the second quarter they served as trained docents, each leading tours one day a week for groups of visitors, including children from local schools. My time participating as an environmental studies student in 1981 in Le Boeuf's course and docent program was some of the most rewarding I spent as an undergraduate at UCSC. Not only did I gain valuable interdisciplinary knowledge of natural history, but working as a docent built my confidence in public speaking and skills as an educator.

The population of elephant seals who returned to Año Nuevo Reserve to breed grew an average of 16 percent per year between 1975 and 1995, to a high of 2041 pups born on the mainland in 1995.¹ The size of the colony has since reached equilibrium, probably because elephant seals have recolonized other areas such as Big Sur (Piedras Blancas) and Point Reyes. Meanwhile, the robust docent program, which was staffed for many years by Le Boeuf's UCSC

environmental studies students, is now staffed by trained volunteer naturalists. The State Park System remodeled one of the old dairy barns to include a new visitor's center with extensive interpretative exhibits. Gone is the funky trailer the docents took shelter in between tours back in my student days.

In addition to his research at Año Nuevo, Le Boeuf has also led expeditions to research sites throughout the world, including Mexico, Argentina, the Galapagos Islands, and Japan. He has authored over 157 peer-reviewed articles and three books. He is currently serving as the Associate Vice Chancellor for Research at UCSC.

This oral history was conducted in two separate interviews, twenty years apart. The first interview was conducted by former director of Regional History Randall Jarrell on July 12, 1994 as part of a series of interviews with faculty retiring as part of the VERIP [Voluntary Early Retirement Incentive Program] available at that time. It was quite a short interview (37 transcript pages) and both Professor Le Boeuf and I felt that it would be useful to do a follow up interview, particularly about his work with Año Nuevo Reserve, which was only touched on briefly at the end of the 1994 interview. That follow up interview was conducted on January 16, 2014.

A big thank you to Burney Le Boeuf for participating in this project and reviewing and editing the transcript. Thanks also to our transcriber, Mim Eisenberg. Copies of this volume are on deposit in Special Collections and in the circulating stacks at the UCSC Library, as well as on the library's website. The Regional History Project is supported administratively by Elisabeth Remak-

¹ <http://ctfs.arnarb.harvard.edu/Public/pdfs/LeBoeufEtAl.AqMamm2011.pdf>

Honnef, Head of Special Collections and Archives, and Interim University Librarian, Elizabeth Cowell.

—*Irene Reti, Director, Regional History Project, May 1, 2014*

Part I

Appointment at UC Santa Cruz

Jarrell: I'm in Burney Le Boeuf's office. It's July 12, 1994 and I'm in the new Earth and Marine Sciences Building. When did this building open up?

Le Boeuf: Oh, about six months ago.

Jarrell: This is the first time I've been in it.

Le Boeuf: I still get lost in it! (laughter)

Jarrell: Yes. Well, to start, what year did you come to UC Santa Cruz?

Le Boeuf: I came here in the fall of 1967.

Jarrell: How were you recruited?

Le Boeuf: Well, I was playing poker with David Marlowe [the late UCSC professor of psychology] in Berkeley. I had gone to UC Berkeley, and I was doing a post-doctoral [fellowship] at the University of California at Davis. Between hands, he asked me if I needed a job. I said, "Well, yes. I do." He said, "Well, why don't you come to Santa Cruz?" I said, "Oh well, maybe." He says, "Well, are you good?" I said, "Of course I'm good."

Jarrell: (laughter)

Le Boeuf: Of course that was just an intro. But I did inquire, and I ended up, I think, giving a seminar, and of course, becoming an applicant, and ultimately I got the job, after convincing Kenneth Thimann and all the rest of them, that I was worthy.

Jarrell: Just shortly before you'd gotten your doctorate at Berkeley?

Le Boeuf: Yes. I was spending a year at Davis. After a year at Davis I came directly to Santa Cruz as a new assistant professor

Jarrell: I read that at Davis you were a lecturer in psychology.

Le Boeuf: I actually took my degree in experimental psychology with Frank [A.] Beach, who was really a physiological, endocrinological psychologist at UC Berkeley. Then I also studied with Peter Marler in zoology. I was in transition just when I was taking my PhD; I was in transition to becoming an evolutionary biologist. After I took my degree, those interests became even greater. So that when I got to Santa Cruz—I was effectively a biologist.

We had an arrangement here at the time whereby every board of studies had an outside member sitting in at all of the meetings, ostensibly to keep things on the up and up and above board. I was the outside member in biology. I was from psychology but I went to all the biology meetings, in part because my interests were in field biology.

Another thing that happened set the path I took. I had a colleague, Richard [S.] Peterson, who was studying seals and sea lions, and I started to do some work with him. Our collaboration was going well, but this ended when he committed suicide after we had been working for about a year and a half. By this time the biologists knew me, and I imagine, thought well of me. So they invited me to come over to biology and take Richard Peterson's place because there was an opening for a person with my skills and interests. So, after two years in the psychology board, I did that. So did Ralph [J.] Berger, by the way. Another reason I joined the biology board was there were no people in psychology at the time who were doing things that were similar to what Berger and I were interested in. So again, that was part of my conversion from an experimental psychologist to an evolutionary biologist.

Jarrell: I always assumed, without checking, that you were trained as a biologist.

Le Boeuf: Well, I was in part, in the sense that I took as many courses in biology as I did in experimental psychology. Experimental psychology at Berkeley was very biological. So it's pretty close to the truth.

Jarrell: Why did you come here?

Le Boeuf: Well, the big impetus at the time was that I liked Berkeley and the Bay Area an awful lot and I wanted to stay there, like a lot of people. Some people with PhD's were working in service stations because they wanted to stay in the

Bay Area. Well, Santa Cruz was the closest thing to the Bay Area. As a matter of fact, I'd inquired about going to Santa Barbara and I could have gone there for a year, but I thought that was not secure enough. When I visited Santa Cruz I fell in love with it, as so many people do. It was really quite an unusual place, and at the same time, it was very reminiscent of the things I liked in the Bay Area, in Berkeley. So it was easy decision to take the job offer here.

I also found the idea of coming to a college-based campus rather attractive, and the whole thing was new and exciting. I was never one who felt like I had to go to a place where there were a number of people doing exactly the same thing I was doing. I never felt that way. I liked going to a pioneering place, where perhaps I'd be the only one doing a particular line of research. That was fine with me. I never once regretted it. I've visited a couple of other places during the period that I've been here, but I never was tempted to go anywhere else. I've always liked it here very much.

Jarrell: When you started what college were you affiliated with?

Le Boeuf: I was in Crown, and I'm still in Crown, although it's really only a peripheral connection now. I'm in science, and the scientists don't play as large a role in the colleges as colleagues in the humanities and social sciences.

Early Days at Crown College

Jarrell: What about in the early days?

Le Boeuf: It was a lot of fun. Kenneth [V.] Thimann was the provost, and you couldn't have a better figurehead, a functioning figurehead, or a more respectable person than Kenneth was. He [was] a great man.² I always respected him, among all the people I've been associated with here. He was terrific. What was nice about it, we all started off together, and we had a College Night on Tuesday evenings. In those days we met in the Senior Commons Room for sherry and drinks, before going to the dining hall for dinner. All of the faculty showed up for the social and dinner every week. I was the wine steward who was responsible stocking the cellar and fueling the faculty before dinner.

Jarrell: (laughter)

Le Boeuf: It was very exciting to chat with colleagues in various disciplines. Here was someone in biology talking to someone in German literature, and someone else in economics talking to someone in mathematics. It can be a challenge to explain what you do, and the underlying paradigm, to someone in a completely different discipline. This diversity was a great benefit of college life. This went on for about 10 years. This changed when we weren't funded in part (50 percent) by the college any longer. The change was that the board of studies paid our entire salaries. Now, there was little reason for the scientists to have much contact with

the college. I think this change in where your stipend was coming from really killed the colleges.

Jarrell: How so?

Le Boeuf: Well, because all of a sudden the attendance dropped in Crown College, especially since most of the fellows were scientists. No one showed up for the events anymore and the newness wore off. The scientists preferred to have their offices in the science building next to their laboratories. Kenneth Thimann was no longer the provost and he was a difficult act to follow.

The thing that ultimately killed it for me, and I stopped going to the college then, was the Asian food affair.³ I was just disgusted by that “damned if you do and damned if you don’t” affair. It was an incident that involved the provost of the college, Peggy B. Musgrave, who took the brunt and the blame, despite having little to do with it. She received no support from Chancellor Robert Stevens.

Jarrell: Many faculty came here, and students as well, because of the college orientation, a residential human scale, as opposed to a Berkeley, let’s say, that’s enormous. The idea was to bring it back to this small scale. When the funding for

² Kenneth Thimann died January 15, 1997.—Editor.

³ In 1988 Merrill College, which shared a food service with Crown College, proposed that its College Night on December 7 feature Filipino food as a part of its ongoing celebration of ethnic diversity. Crown College administrators objected because of their concern that serving “Asian” food on that date, the anniversary of Japan’s bombing of Pearl Harbor, would be insensitive. The episode generated a heated conflict between Crown and Merrill administrators and faculty and escalated into a campus-wide affair that included various student groups’ charges of racism

faculty devolved upon the boards, as opposed to being divided between boards and colleges, it took the life out of the colleges, as far as your connection. What do you think of the colleges now? How have they evolved? What is their place?

Le Boeuf: Well, I don't think that I can really answer that question. I think that's more of a question that you should direct to students, who actually live in a college. Indeed, many think that the colleges have simply become bedrooms for undergraduates. I have nothing at all to do with the colleges any more. When we started to feel the economic crunch, there was a message sent down from the administration, saying that everyone should teach one extra course every three years.

Jarrell: For the college?

Le Boeuf: No, in the departments, think. In any case, it wasn't specified. When I was in Crown in the early years, one of my avocations was wine making, wine discrimination, and viticulture. So I taught a course in Crown College for about ten or eleven years on that subject, at first with Lawrence [R.] Blinks, who was a professor emeritus in biology, then with Joe [Joseph S.] Miller, an astronomer, who is now the director of Lick Observatory.⁴ It was a very successful course and it embodied, I think, the specialness of courses taught in the colleges. It was very exclusive because we could no more than thirteen students. This limit was

against Crown, counter-charges against Merrill by Crown faculty, and the attempted mediation by Chancellor Robert Stevens.

practical; one bottle of wine gives about fifteen people (two faculty and thirteen students) a reasonable sample. We taught the course once a year. There was a great deal of competition to get in the course.

The course proceeded as follows. One of us gave a lecture on a grape or a wine-growing region of the world and this was followed by a practicum, a wine tasting. Each student had six to seven glasses of wine in front of them and we'd do sensory evaluation for about an hour. Of course, wine loosens the tongue, and it was a delight to see a professor emeritus, a member of the National Academy of Sciences like Lawrence Blinks, in the same room drinking wine and becoming very informal, talking to students who were barely twenty-one. That was superb. Some of the best experiences I had as a teacher.

Was the course a success? Joe Miller and I agreed that we had more students go into some aspect of wine or viticulture business, as a result of taking this course, than in astronomy or biology, our professional disciplines.

So, to get back to my story. When a year or two ago the administrators asked us to volunteer to teach another course, I said, "Well, I'll get together with someone else and do the wine course again." Crown didn't want it because there was a new provost. So I went to [Provost] Carlos Noreña at Stevenson College and he said that was a fine, great idea, they'd love to do it. So Marshall Sylvan and I taught the course.

⁴The course at Crown College was "Enology: the history, biology and chemistry of wine making

Now again, this was a year, a year and a half ago. It was an awful lot of fun. The students liked it. We had rave reviews across the board. I think if you had more of that in the colleges—it's a course I would teach for nothing anyway. Of course, that's how it was originally. Every faculty member was asked to teach something in his avocation. It didn't have to be something that you were a specialist in. But it brought you together with the students in a more informal, small setting. So clearly if there were more of that I think the colleges would be more successful. You know, as you grow into the profession you become more busy. There are more claims on your time. And there's got to be some reason for you to take the walk over there [to the college] and spend the time.

Biology Board of Studies

Jarrell: Okay, I'd like to ask you now to talk about the biology board of studies, how that board has evolved over the years, and I'm very interested in the fact that this started out with a strong emphasis on undergraduate teaching, close contact with faculty and students. How did that get exemplified in your teaching?

Le Boeuf: In the board of studies?

Jarrell: Yes.

Le Boeuf: Well, clearly we did a better job of working with small groups early on than we do now. In my case, one of the courses I've taught since I've been here is *Field Studies in Animal Behavior*.

Jarrell: I've known a couple of students who've gone through that class.

Le Boeuf: Well, it is an unusual class (in some respects like the wine class). It is a type of course that one can take at Berkeley. It consists of taking students into the field conduct research on pinnipeds, specifically elephant seals, at Año Nuevo State Reserve nineteen miles north of here. We gave students direct experience in how fieldwork is done in an ongoing project, but at the same time we taught them to collect data on their own and write a research report. This was on-the-job training, so to speak.

Early on, I took students, especially over long weekends, from Friday to Monday or Tuesday, with me to Año Nuevo Island. We had to get in a boat and a wet suit. I think the class size was limited to something like six people, and of course we lived together, camping out under primitive conditions. We slept in sleeping bags on army bunk beds. We had to bring in our own water and propane gas. We cooked meals and ate together. That was a very close-knit experience, to be sure, and we got to know each other pretty well.

Over time, the course evolved. Now I take twenty-five students, and of course I write the study guide, and I give occasional lectures, but I spend far less time in

the field with the students than I used to. I now have three teaching assistants who are really doing most of the hands-on stuff with the students. Even so, there are another twenty-five to fifty students that you have to turn away. There's more demand for that kind of course. With respect to the other courses, the ratio of students to faculty has gone up. Early on, I had maybe twenty-five, thirty students in a class. Now my animal behavior class, the lecture course has 100 to 150 students. I can't ask the students to write a long paper because you don't have time to read 150 papers.

Jarrell: Do you have TAs for that class?

Le Boeuf: I have TAs for that class too, but it's mostly objective, multiple choice, here again something that really distances the student from the instructor. So that's evolved over time. Biology is, I think, a rather popular major. We have a lot of people that want to be in it. So today, there are fewer small classes than in the past.

I think biology here has been a very successful and popular discipline. I remember Chancellor Dean McHenry saying in the early years, "If this place is going to be successful, you people who are coming in right now fresh and new will have to make names for yourselves. You will have to be successful if this place is going to succeed." I think we've done that. There are many people in biology who have had exemplar careers, e.g., Harry F. Noller. He started here, became a leader in his field, and he's still the same person he was then.

Jarrell: He's a molecular biologist?

Le Boeuf: Yes. There are many others who have achieved much in other fields as well. Chancellor McHenry was prophetic.

Jarrell: So even though the class size, the ratio of faculty to students, say for undergraduates, has expanded quite significantly, over the years, how would you gauge one of your undergraduates who majors in biology and comes out of here? Are they a very well-trained young person, ready for graduate school if they want to go into biology?

Le Boeuf: Yes, I think so. Biology is a difficult major with many prerequisites and required courses. I think students are exceptionally well trained here. I would add, too, that I think the training today is different than it was twenty years ago. There's a much greater emphasis on molecular biology today and we're very strong in that department. I think we are much more reductionistic and molecular today than we were then, but of course, the situation demands it.

I think what we don't do well with is a person who might become a lawyer, or an economist or be involved in some other disciplines, who might want to major in biology because it's the study of life after all, and it's relevant to a lot of things. We certainly could do a better job of giving degrees in that field to people who aren't going to become biologists. Sometimes I think we assume that all of our majors will go on to graduate school and become professional biologists.

Especially today, when there's an interest in the environment, it would be great to have a lot of these people have a good grounding in biology. But that would demand a slightly different curriculum.

Jarrell: In looking at the relationship between environmental studies and biology, I've known a number of environmental studies graduates here who are quite ignorant—they're not biologists, they don't have a scientific underpinning—

Le Boeuf: Yes.

Jarrell: Would you like to see more of a connection between those two fields?

Le Boeuf: Well, I would. But that's not quite what I'm talking about. What I'm talking about is the student who comes here very excited about studying biology and sometimes is frustrated and rather surprised at the courses he or she has to take. Because it gets to be so detailed, and so far away from their personal interests. Some people have a sense that biology is out there working with animals. It's green. It's living. It's throbbing. It's bloody—whatever. Well, it's true. But today a lot of biology is sitting in a lab doing cloning experiments in molecular biology. That's important too. All I'm saying is that the pendulum usually overswings and right now we're in a period where molecular biology is in its heyday. But I think that there's an awful lot of other biology that's important too. A lot of these people who are not going to become graduate

students in molecular biology would do well to have a slightly different curriculum that they could follow.

Jarrell: A different emphasis for different kinds of biology?

Le Boeuf: Exactly. Yes.

Graduate Students

Jarrell: What about graduate students whom you've worked with? When did you start taking on graduate students yourself?

Le Boeuf: Well, I took graduate students right from the very beginning. We gave a PhD in biology right from the very beginning. I think we gave doctorates as early as 1970. I not only took my own graduate students early on, but I inherited some from Richard Peterson when he passed away. Over the years I've had about twenty-five students—about twenty PhD students and about five Master's degree students. I've averaged more than one per year since I've been here. That, to me, has been the most interesting part of it, particularly in the last ten or fifteen years.

I think I've gotten a little jaded with undergraduate teaching. I really need a break from it. That's part of the reason why I'm taking early retirement. But I really thoroughly enjoy the interactions with graduate students. I do that well, I think. I like the one-on-one relationship. I like the small seminars. I like commenting on and revising research papers. It's unfortunate that we're not

operating with so much money that we can afford to allow faculty members to go in one direction or the other, depending upon where their heart is at the time. Rather, it's that everyone has to be, in this case, a man for all seasons, having to do all the undergraduate teaching as well as everything else. If you step back, and you're the chancellor, and you look at all the boards, they differ considerably in that respect. In biology we've always had the burden of having many graduate students, or at least some of us have. In other boards you don't even have a graduate program.

Jarrell: It wasn't originally planned to mount a graduate student in biology immediately?

Le Boeuf: Here again from the mouth of Dean McHenry. Early on he said, or quoted someone else saying that when they first saw this campus that it would be a great place to do humanities, and to write poems under the redwoods. But surely they weren't going to do science in this atmosphere. Well, it has turned out to be just the opposite. I think physics, astronomy, biology, and chemistry, have all been very successful, whereas literature has floundered. They don't have a chairman for their department. There's petty bickering here and there and politics affects appointments and other vital decisions. That's true of a few other boards as well.

Jarrell: Yes, the sciences seem to have been enormously successful and originally this was going to be a humanities bastion, maybe.

Le Boeuf: What happened?

Jarrell: I don't know. But it's turned out to be quite different.

Le Boeuf: Yes, well that's how we differ from Oxford and Cambridge I suppose.
(laughter)

Research Funding

Jarrell: Yes, well what I'm also interested in, since you have a very fascinating dossier in terms of your research, is your major funding sources over the years.

Le Boeuf: My major funding source through the years has been the National Science Foundation. I'm very fortunate that I was funded continuously from 1970 until the present (about 2000). I think I had one skip of something like six months, but this has been an unusually long continuous funding of about thirty years. So I'm very grateful for that. Within the National Science Foundation, I've been funded by a number of different panels. The panels are biological oceanography, physiological processes, population biology, physiological ecology, and lastly, a panel called psychobiology. I've received monies over the years from all of those. What that indicates is simply that my research has been varied, and was considered worthy by each one of these quite different judging panels.

Right now, NSF is changing. They have less money than ever. Of course, as you grow in your profession and become a professor, you become more expensive.

Now for the first time I think that I'm not going to go back to NSF for money to support my research, in part because I've found another source that provides more money (laughter) or at least provides ample money for a summer salary, and it's also appropriate to the zeitgeist, that is to say, the Office of Naval Research. I just got a three-year grant from them. Now, fifteen years ago it would have been a bit controversial to go to the Office of Naval Research. But it's not today. The Cold War is over. They are supporting research which I consider very fundamental, basic, and important, environmentally. The grant I have now is on the effect of noise, or low frequency sound on marine mammals in their habitat. I feel very good about doing that work. I think it's very important; I think it has to be done. The other thing I would say is that of late, again, as you grow in the profession, private donations have become much more important.

Jarrell: From what sources?

Le Boeuf: Well, I was fortunate enough to meet a person five or six years ago, a lawyer from San Francisco, George Malloch, who took an interest in my research. He's a trustee for the University as well.⁵ He has been funding my research since that time. This is like getting an additional NSF grant every year. It's even better because there are no strings attached to the gift. I can spend it any way I want to. He has fully funded two of my graduate students, as well as provided money for my diving research. That's extremely important. I guess I would say the one

⁵ Le Boeuf wrote in a margin note: "Malloch is now chair of the UC Foundation."—Editor.

thing I've learned to do very well in my career here is how to write a grant proposal. (laughter)

Jarrell: Well, it looks like it. This is a rather thick vitae. You have an astounding array of grants.

Le Boeuf: I think it's very important. Right now, I feel that one of the most important things I can do is to seek out money for my graduate students and make their tenure here easy, so they can think and actually do what they have to do without being constrained by having to go after money themselves. I think it all works very well. At a time when you spend maybe less time in the field, as you get older, you spend more time at your office doing things like this. It's still a collaboration with a student. It's a different kind of collaboration than I might have had in 1968, but it's equally important one.

Jarrell: And gratifying.

Le Boeuf: Yes.

Jarrell: It's interesting, because you said that National Science Foundation funding has diminished.

Le Boeuf: For everyone.

Jarrell: I know, for everyone. I think that that certainly is going to impinge on biology departments all over at major places. Because you can't have graduate students unless you have funding.

Le Boeuf: That's exactly true in biology. You cannot admit a graduate student unless you can see to their welfare while they are here. But this is also happening at a time where across the country science funding is more difficult to obtain. When I was trained, a good scientist didn't do anything but basic research. Well, that's changing now. There is some research that has to be done for a particular purpose. I think we are going to have to make that conversion to directed research as opposed to strictly basic research.

Jarrell: Do you mean more applied?

Le Boeuf: That is basically what I'm talking about, applied and basic. An example is the grant I just told you about: the effect of noise on marine mammals in their habitat. Well, there's an applied aspect to that. The navy makes a lot of noise; supertankers make a lot of noise in the ocean; industrial noise is a problem for marine mammals. You'd like to get a handle on that. You'd like to know how important it is.

Jarrell: What kind of an impact does it have?

Le Boeuf: Precisely. But at the same time, as we do studies like that, I've been interested in diving behavior and diving physiology. Essentially what we do is simply add another device on the animals that we monitor, so I'm not compromising myself. I'm not all of a sudden making a big switch from pure research to applied research.

Jarrell: Right.

Le Boeuf: It's simply taking a step in that direction. And that's a logical one.

Jarrell: But also it seems to me, the environmental dimension—

Le Boeuf: Exactly. There's more of an emphasis on that. And there's an environmental aspect. Sure.

Jarrell: I've kept up in reading about this research in the newspaper and the kind of controversy that it's evoked in terms of Monterey Bay.

Le Boeuf: Oh, yes. A lot of that is misunderstood. We simply don't know the facts and so studies of this kind have to be done.

Jarrell: In terms of biology, what are the implications of diminished funding and this new sort of emphasis, with definitely less money available. What kind of an impact is that going to have here? Or is it?

Le Boeuf: Well, first of all, every faculty member has to work harder to get money. It used to be when I first got in the field, when I wrote my first grant proposal, I would write a proposal in a week or two weeks, and it was funded. Writing proposals has gotten more complicated as funding has dried up. When I wrote my last NSF proposal I had to spend about two months on it. I had to polish it. I had to write and rewrite it, and reread it numerous times. I felt like everything had to be just so tight. It was to such a point that it was like writing an article that was going to be published.

Jarrell: And all you needed was the data! (laughter)

Le Boeuf: Right. But the effort is much greater to get a certain amount of money because the competition is greater. So even though you're putting in more effort, there's still a likelihood that you won't get it. Indeed some agencies like the National Institutes of Health expect you to write a proposal and get it rejected, and you rewrite it and you resubmit it several different times. I rarely had to do that, and I think that's very forbidding because of the time element involved. I think clearly people are already starting to look for different sources.

Jarrell: I found it interesting when we were talking before I turned the tape recorder on, you said after you retired that you're not going anyplace. You're staying right here; you're going to be externally funded, exclusively externally funded. You're still going to have graduate students; you're still going to pursue your research. Now, what will your relationship be with the institution? You

won't have to teach. You won't have to do committees and administrative duties. So funding is really important in terms of your relationship with the institution.

Le Boeuf: Well, of course. Without funding I would have none of this. Without funding I more than likely would, if not lose my office.

Jarrell: Right.

Le Boeuf: On the other hand, if you have money, if you have a three-year grant, then of course the chairman says, "Oh well, sure. Use your lab. You've got your lab for three years. You've got your office for three years."

Jarrell: Then the university is taking its cut, right? Its overhead cut?

Le Boeuf: Well, of course. Always. The point is if you've got something to give to the university, if you're training students, or if you're writing papers and you're adding to the good image and the luster of the university, then of course people want you to stay here. I think there's a bit of fear in some of the remaining members of the board that they're giving away something to the VERIPs, which is shocking for me to hear.

Jarrell: How?

Le Boeuf: Well, graduate students. If VERIPs can have graduate students, some people will say, “Well, will they treat the graduate students properly? Because after all they can always just take up and leave.” So in the case of biology they’ve said, “Well, you can take a graduate student, so long as you share the graduate student with an active faculty member.” Well, that’s fine. But what gets me is the fear of the VERIP, of the emeritus [professor]. It’s shocking. Because after all, you’ve devoted most of your life to this institution, (laughter) to the field, to biology, to science. You’re hardly going to be a person who’s going to all of a sudden become irresponsible. I think that emeriti are a great resource. I would like to see how we might bring this about, particularly with respect to graduate students. I think having been around, and having the wisdom of actually putting in all these grant proposals, hustling money, teaching a number of students, I think I have a lot to say to graduate students. I think we’re a great resource that could be used more effectively.

Jarrell: You mean the VERIP retirees as a group?

Le Boeuf: Yes.

Jarrell: Some of your retiring colleagues will be entirely leaving. Others like yourself will be staying and participating—

Le Boeuf: No different.

Jarrell: Yes.

Le Boeuf: At least for a while. Sure some have taken other jobs already. Some you'll never hear of again.

Jarrell: But it's pretty astounding for such a young institution that one-in-eight faculty members is retiring.

Le Boeuf: Yes, that's right.

Jarrell: The most senior, the most seasoned, veteran folks.

Le Boeuf: That's right. It is, and it's frightening. It really is. Some awfully good people are all of a sudden retiring.

Jarrell: To get back to graduate students a bit, I don't know if you'll agree with my assumption here, but how do you feel about training graduate students in biology who might never find academic employment? That used to be sort of a given.

Le Boeuf: I'll do what I can to get a student a job. I devote most of my time to making them the best biologists that I can. Getting them a job is another matter. Positions in biology are getting more competitive. As in my case, and many other people, it's often who you know, your personality, how you follow through.

There have been some students who got jobs very easily who were much less qualified than others who worked very hard at it for several years. It's a sad state.

Jarrell: I was thinking of this more in terms of a policy, that I don't know how the biology board determines how many graduate students it will accept in a given year.

Le Boeuf: Well, I don't think it's that far-sighted. I think the way it works is that each faculty member argues for a certain number of students, and they want the highest-quality students. That's contingent on them having grant money to see to the student's welfare. It's really an argument made at that level.

Jarrell: On an individual level?

Le Boeuf: I don't think there's much thought down the line about, well, should we matriculate fifteen molecular biologists to every five organismal biologists? There's an awful lot that gets lost in the shuffle. I'll give you an example. There are certain members of the board of studies in biology who complain that they're not getting the best students, and it's true, because of the discipline. Let's say it's molecular biology. There are a lot of medical schools in the country that are very big, have a lot of equipment and a lot of money. Of course, if you are a would-be molecular biologist, a place like that might be much more attractive than Santa

Cruz, unless you want to do RNA work with Harry [F.] Noller. That would be terrific.

On the other hand, the field I'm in, marine biology, or at least marine mammals, marine vertebrates, there's no better place in the world than UCSC, in my opinion, that trains people to do this kind of work, and gives them access to these kinds of animals. We get the very best applicants. On the other hand, we have to argue with our colleagues as to how many we can take, despite the fact that they are the very best in our own small field. So I don't think logic and reason sort of sit on a throne above all of this and prevail by any means. Moreover, there are more jobs available in molecular biology than in marine mammal science.

Jarrell: You're giving me a sense of an individual biologist, okay, who's running his or her own apprenticeship system.

Le Boeuf: That's all it is, basically.

Jarrell: That's what it is. When you push it all together into a board, then you can say, oh there are twenty people, or there are fifteen graduate students, or whatever, all right? But each one came here at the behest of an individual person.

Le Boeuf: That's right. Well, I'll give you a further example. When you come up for merit increases, there are certain people who judge files and consider a faculty member who has too many graduate students as being irresponsible,

because you can't do a good job of it. Okay? Well, that individual faculty member might be saying, "My goodness, I have this big burden which should be recognized. I'm working harder because I have more students." There's no unanimity on this either.

Jarrell: Yes.

Le Boeuf: It depends on the field. In some fields you need a lot of students, and in other fields one or two is all you can manage.

Chancellor Dean E. McHenry

Jarrell: I'd like to ask you about your overview of this place, the larger institution outside of your board. Can you characterize Dean McHenry, what you think his contribution was, his strengths and weaknesses. You were here at the beginning; you were one of the people he brought here.

Le Boeuf: Well, I have a lot of respect for Dean McHenry. I think he was *the* person to have as chancellor at this early time in the development of the campus. They were simpler times, to be sure. Dean knew every person on campus, and when you did something, he remembered it. He sent you a note, and he remembers that to this day. I think he was terrific, very good for this place. We were very fortunate to get him in the driver's seat at this early stage.

Jarrell: Yes, he was very in touch with the faculty.

Le Boeuf: Well, I think he was a good administrator too. I mean, he knew his job and he did it effectively. He was a good spokesman away from campus. I think he improved town-gown relationships. He was good with higher administration. He did all of these things very well.

Jarrell: What about Mark [N.] Christensen?

Le Boeuf: Well, he was in for such a short time. I don't remember much about him.

Jarrell: Do you have any thoughts about chancellors Angus [E.] Taylor and [Robert L.] Sinsheimer?

Le Boeuf: Well, Sinsheimer I remember very well because I think that's another high point, actually, in our history. Almost more so because of his wife [Karen Sinsheimer]; they were a good team. He was the chancellor but she was in charge of the social scene. She brought faculty together socially. It was an exciting time and the place to be. Understand that we did not have a faculty club so the chancellor's socials served the purpose of getting faculty together informally.

Jarrell: You never had a place where everybody could convene.

Le Boeuf: No and it really is a pity. But Sinsheimer's wife, Karen, promoted the social life on the campus at this time.⁶ This was vital for the esprit. She offset her husband very well; he was rather shy and reticent. Although I didn't agree with him on everything, (laughter) and I think he had some weaknesses, I do tend to remember that period as being a high point in campus history. I have to say I think the low point was [Robert] Stevens.

Jarrell: What about—

Le Boeuf: The present chancellor [Karl S. Pister]?

Jarrell: Well, I wasn't going—well, go right ahead.

Le Boeuf: Well, I won't say anything there except that it's a big place now. Maybe that's the reason for it. But I think there's no contact. There's essentially no social life. I think Pister might be competent, but he and his administration are so isolated, so impersonal. UC Santa Cruz has changed in that respect, more than in any other.

Jarrell: It's become a rather impersonal institution?

Le Boeuf: Oh, absolutely. Yes.

⁶ See Randall Jarrell, Interviewer, *Karen Sinsheimer: Life at UC Santa Cruz, 1981-1987* (Regional History Project, UCSC Library, 2011) <http://library.ucsc.edu/reg-hist/ucsc/karen-sinsheimer-life-at-uc-santa-cruz-1981-1987>

Jarrell: And that kind of conviviality and social intercourse is rare?

Le Boeuf: Yes, exactly. I mean, to the point where you don't bother to go to the socials anymore.

Current Impressions of UC Santa Cruz

Jarrell: What do you think of this place, now that it's approaching thirty years?

Le Boeuf: What do I think of this place? Well, I've got a few off the cuff remarks. I like it very much. I would send my kids to college here. That says something about it.

On the negative side, you get more conservative as you get older and certainly that's happened to me and this place, too. There are some things going on, not just here but at many other campuses, which I don't agree with, which I think in the long run will not stand the test of time. Things have become so politicized one is reluctant to speak freely and if you can't do that on a university campus, where can you speak freely.

Jarrell: Could you be a little more specific?

Le Boeuf: Well, I'm told, here again, it's hearsay, that the introductory course in literature was taught for a year or two by a person who comes in chains, and the whole one-quarter class is about the homosexual's point of view. Well, this might be an important perspective but there is so much more to literature that must be

addressed in an introductory course. I would like to see the classics taught, because that's what I would like my children to get.

Jarrell: Yes. So the politicization of the curriculum.

Le Boeuf: Yes, and political correctness in all of its guises. Freedom of speech is in jeopardy on many college campuses today. One has to be careful not to offend. The down side is that we can't speak freely. This is troubling. If there is one place that we should be able to speak freely and even argue amicably, it is in the university.

Jarrell: But it hasn't really happened in the sciences so much?

Le Boeuf: Well, again. I think the sciences are more conservative. We're not as quick to respond politically as the social sciences and the humanities have been. That's protected us for a while. If you do good science—and the metrics for doing good science are clear—I don't think it matters whether you are from one culture or another, or one sex or one sexual orientation or another. In biology, we've had a very good record in this respect. We have criteria for doing good science that people can agree on. Whereas someone in anthropology or literature, it might be much more difficult, where politics might play a more important role. I served on CEP [Committee on Educational Policy], where faculty have to describe new class [offerings]. Some of the new classes I see coming on are just nonsense. You wonder how in the world they get through. I've often thought

that the entire curriculum should be evaluated every 5-7 years with the aim of deleting worthless courses.

Jarrell: Do you remember in the 1970s some of the courses at Kresge College?

Le Boeuf: Yes.

Jarrell: Nothing new under the sun in a certain way, you know?

Le Boeuf: Right. I guess we've continued in that direction. Maybe it's not as touchy-feely as it used to be, but it's more liberal in other respects. Again, the exception is the sciences and engineering. Will it eventually happen here too?

Jarrell: I don't think so.

Le Boeuf: I hope not.

Jarrell: I don't see how it could.

Le Boeuf: Well, I can tell you how it could.

Jarrell: How?

Le Boeuf: When you start holding conferences, scientific conferences that are just for men or just for women.

Jarrell: Oh, I see what you mean.

Le Boeuf: I think that's a harbinger of that sort of thing. And that's happened here.

Jarrell: Or, for instance, if you said the culture of women scientists is different than the culture of men scientists.

Le Boeuf: I think that's—we're walking a line there.

Jarrell: It seems that that's a trend not just here at UCSC but in many elite intellectual academic institutions in this country right now.

Le Boeuf: To be sure. I agree. Yes. I think that's something that bears close watching.

Long Marine Laboratory

Jarrell: Something else I wanted to ask you about: what has been your participation over the years with Long Marine Lab and your relationship with that entity?

Le Boeuf: Well, I've seen it grow. I've been part of it from the very beginning. I did studies in Long Marine Lab during certain months of the year with colleagues like Dan[iel P.] Costa and Leo Ortiz. At the very moment, indeed, we're trying to improve the facility by joining with a large group of people and

the UC Santa Cruz Foundation to solicit money from David Packard. We want to improve the facility by constructing a swim flume, a deep tank or a hypobaric chamber, all of these would increase our capability here at Santa Cruz. I'm very supportive. I'd like to see LML grow and prosper.

I think marine science has a very attractive future here at Santa Cruz. We should promote marine science aggressively. I mean marine science in the most general sense, from organic marine chemistry all the way up to marine vertebrates.

Jarrell: I was going to ask you about that. In this region of Monterey Bay—

Le Boeuf: Well, particularly with the Monterey Bay Marine Sanctuary, and the closing of Fort Ord. We have a great deal of visibility for doing research on marine vertebrates here. We have MBARI, the Monterey Bay Aquarium Research Institute, which is a very powerful unit, very high-powered, with independent people coming in.

Jarrell: And it's Packard money?

Le Boeuf: Well, in part, yes. Anyway, we have something like seventeen institutions in Monterey Bay that do marine-related research. I think over the next ten to fifteen years you'll see some coalescing, more collaboration and integration among all of these units. You will see Monterey Bay being used as a model for studying the ocean, the ocean-interface with the land; the nearshore,

and the effects of human activities on the ocean. I think our LML and our campus will be in the forefront of this effort.

Jarrell: Is marine science going to have a place at the new UCSC part of Fort Ord?

Le Boeuf: Yes, it will. Indeed.

Jarrell: I see. What's your relationship with Año Nuevo Island?

Le Boeuf: I have been the director of research there for the state department of parks and recreation since 1967, the very beginning of our research effort there. The University of California has had a lease on that place to conduct research on the island since that time.

Jarrell: I didn't know what the formal agreement was. There's a lease the UC Regents have?

Le Boeuf: The way it's been, particularly in the last ten to fifteen years, if anyone wants to do research there, it has to go through me and a committee. We make recommendations to the state department of parks and recreation and they usually take our advice.

Jarrell: I see. To protect that whole environment and the animals?

Le Boeuf: Yes. Essentially, for my work, it's been my laboratory since I've been here. I think it's good for us, because we've had students who were docents there, leading tours, and then the parks outgrew that, and then our students and some of the faculty members became the people who trained the docents from the community who are now doing the work. We've always been a very visible presence out there. I think it's been one where we've gotten a great deal of good positive feeling for UC

I wish that it would go further than it has. I've tried hard to get a University of California facility at Año Nuevo on the mainland. That's not gotten anywhere, in part because you are dealing with two California institutions and they rarely work together. What you really need is someone in our administration who is high up to talk to someone in the state department of parks and recreation administration and work out a deal over coffee somewhere in Sacramento, which would be to our mutual benefit. But the way it is right now it's just a stalemate. Some things we want, the parks see as a detriment to their charge. So they hold us off and it doesn't get any further than that. It's a pity. Because it's a great working relationship, has been mutually beneficial to us and the park rangers, as well as for the public (tourists) and the animals.

Jarrell: You provide the expertise.

Le Boeuf: We provide all the expertise and the information about the animals which they then to transmit to the public. They are the people who actually pass

it on. So we're good for them. At the same time they give us the license to actually operate there. They should invite us into their house and make us comfortable. So would you follow up on that please? (laughter)

Jarrell: Burney, thank you so much.

Interview II: More on Año Nuevo State Reserve

Reti: Today is January 16th, 2014.

Le Boeuf: It's fair and sunny.

Reti: And it is *quite* sunny. It's in the low 80s, and it's January in Santa Cruz, which is very odd. We're in the middle of an extreme drought year. This is Irene Reti. I'm here with Dr. Burney Le Boeuf, and we are expanding and filling in an interview that Randall Jarrell, previous director of Regional History, had done in 1994, as part of a series of interviews with faculty who were taking early retirement [VERIP]. One topic that you did not have a chance to talk very much about during that interview is the Año Nuevo [Natural] Reserve and the long association you have had with that place on the coast. I want to begin by asking you how you first got involved with Año Nuevo. When did you first visit it? How did you decide to do research there?

Le Boeuf: Yes. Well, context is very important.

Reti: Yes.

Le Boeuf: I had studied at UC Berkeley, conducting research in behavioral in endocrinology under the guidance of Frank [A.] Beach, who was an expert on hormones and behavior. This research was conducted in a laboratory with rats. For my thesis, I switched to a problem with dogs, which put me into a semi-field situation, halfway between the laboratory and the field. And it was a question having to do with likes and dislikes among individual dogs, and it was an interesting question because the attitude at the time—here again, context—was that if you filled a female mammal with the appropriate sexual hormones (estrogen), then she responded automatically in a favorable way to the sexual advances of a male—dogs here being the subjects.

We found out was that was not at all the case. You have individual differences in dogs and probably in most other animals as well, such that even though the female was in estrus, she had likes and dislikes that were so strong that if the choice was hers, she would decide not to mate with this male but to mate readily with another male. The choice was independent of her hormonal condition. So I came to Santa Cruz with that type of background. I went to Davis for a year. I was working with dogs there. And when I came here, Kenneth [V.] Thimann was the Crown [College] provost, and he said, “Well, we have an island nearby. And if you came here, would you consider doing research on seals? It’s only a half hour away.” Of course I answered yes, because I wanted the job.

I was offered the position. That was in September, when we showed up to begin the year, fall of 1967. It wasn’t until December that I visited the island in the

company of Richard [S.] Peterson, a young assistant professor of biology, who had been trained at [Johns] Hopkins [University School of Medicine] and Oxford [University]. He had done his PhD thesis on fur seals in Alaska.

And so here I am, I'm coming from a laboratory, basically, and suddenly I'm on this remote island surrounded by hundreds of noisy seals and sea lions. It was an amazing sight. I had many questions. It was December and the elephant seals were just starting to breed. Coming from the laboratory, we did not consider dominance hierarchies very important because this was something you forced the animals to do to determine a winner. But when I saw the seals for the first time, it was obvious that some males dominated others and this implied a hierarchy. "Is that so, Dick?" He didn't know.

So I had all these questions. We went back to Santa Cruz, and Dick Peterson and I wasted little time in writing a faculty research grant, a small grant, to get things started. We got the award. I started going out to the island and got hooked very deeply right away. We divided up the work so that Dick was in the charge of the sea lion and fur seal work, and I was in charge of the elephant seal project. I was spending long weekends on the island, and during the week, did my teaching. I led an exciting but schizophrenic existence for the first three or four years.

Reti: How'd you get out there?

Le Boeuf: We got to the island in a rubber raft. Rubber boats were very primitive at the time, and there were some situations [chuckles] that were hazardous, even life threatening, and funny, all at the same time. I'll give you an example. One day Dick and I prepared to launch the boat to go to the island. But it was very foggy. I said, "Dick, we can't even see the island." And, you know, it's, like, a quarter of a mile away. So he replies, "Oh, no problem. We'll just look at the sun, and we'll do it."

Reti: (laughs)

Le Boeuf: So we headed off to the island. And it's very treacherous in the middle because you got these waves coming in from both sides crashing in the middle. About twenty to twenty-five minutes later, a little bit longer than I expected—we land on the beach. But it was the beach on the mainland. We had come full circle and landed where we started out!

Reti: Oh, wow!

Le Boeuf: So that was only one of many episodes like this. But the work took off very quickly. Indeed, we were able to publish three papers in the prestigious journals *Science* and *Nature* in the first two years of our research. Then we got funded by the National Science Foundation. Dick died a year later. Subsequently, I was funded continuously for thirty years by the National Science Foundation to conduct research on elephant seals. The animals have been good to me.

Reti: And when you were spending the night were you in a tent on the beach?

Le Boeuf: No, we did a little better. We had bunk beds with a roof over our heads. The island had a lighthouse, and the lighthouse keepers had a very ornate Victorian house, but it had been abandoned by the time I came on the scene. The seals and sea lions had taken it over, and there was sand all over the inside, and the windows were popped out. But there was an old foghorn house, and there was what was called a gasoline storage area, which was the cookhouse for us. We actually had a couple of bunks in there, too. So it was primitive. We had to take in our own water and our own gasoline, and of course, all food and drink, but it was perfectly all right.

Looking back, I think the nicest thing about it was we didn't have a radio, we didn't have TV, and we didn't have an Internet connection. When you were there over the weekend, it was very private, and isolated. You couldn't go out to Safeway to get more supplies, either. You had what you had. The simplicity was refreshing, both to me and I think to the students who accompanied me. Usually I took three or four students, up to six, over the weekend.

Reti: Were these graduate students?

Le Boeuf: At the time, I think most of them were undergraduates. Later, I took graduate students.

It helps to set the context. Not much was known about seals and sea lions in the late 1960s. These animals, like most others, had not been studied in depth in their natural habitat. First, long-term field studies, which are vital to understanding the animals, were just beginning. Second, there were no studies of marked individuals over their lifetimes. Third, most of the work being done on seals and sea lions was done by government researchers. Researchers from the National Marine Fisheries Service or the [U.S.] Fish and Wildlife Service viewed marine mammals, as well as sea otters, as a resource. The objective of government research was to protect the resource and to enhance the utilization of the resource. They were primarily interested in the number of animals, the status of the population, and what could be done to enhance production. It was not fundamental science. It was just what we called “bean counting.”

Reti: So I’m trying to understand what they wanted to utilize marine mammals for in the 1960s.

Le Boeuf: Well, a lot of it was legacy, what they’d done before. With fur seals, it was the value of the pelts. The US had a treaty Japan, Canada and Russia. A certain number was killed annually, the furs were sold, and profits were split

Reti: They were still thinking in those terms.

Le Boeuf: When you go way back with elephant seals, it was the oil. But, of course, that disappeared, too.

Reti: But they weren't thinking they were going to use them for oil in the 1960s.

Le Boeuf: No, because they were virtually wiped out in 1890 anyway. But once the seals were put into this government category, federal category, you just don't take them out; they're there for a long time. And they still are there. So to get permits to study them, you got to go to that governmental agency. For example, if you want to study sea otters today, you must get permission from the Fish and Wildlife Service; they have long been the responsible agency for sea otters.

In any case, back to my point. If you were a university professor new to studying these animals, you could address fundamental biological questions. We started to learn a lot about marine mammals when researchers from university community began studying them. We had the luxury of addressing fundamental questions. We weren't tied down to studying the status of the population or counting—we may have done that anyway because knowledge of the population is important, . We were able to ask questions about social behavior, reproductive success and mating systems. Why is it that elephant seals are a highly polygynous society? A few males do most of the mating. It is the most extreme of all the mammals. Why is this? What led the animals to be that way? How is that they can go without drinking when they're on land for a hundred days? How is it that they can dive to a kilometer and a half and stay down for up to an hour and a half, maybe even two hours, without breathing? How and on what do they feed? What is their migration pattern? These are fundamental questions that, if you can answer, tell you a lot about their natural history. So things changed,

starting then. I happened to be there at the beginning of that period of change, so it was very exciting.

Okay. So back to site of the studies. I'm going to the island on weekends with students. All of the work is being done on the island. The only elephant seals on the mainland, at the time, are a few males who can't get near females on the island where the females gather and give birth. The mainland is managed by Parks and Recreation, but they have no program there at this time, because few tourists visit.

Reti: So it already was a state park at that point.

Le Boeuf: It was a state park, but there was one ranger who saw to several parks in the area, from Butano [State Park] way up Half Moon Bay. He might drop by and spend two hours once a week. Well, all that changed radically in December of 1973, when *Sunset* magazine published an article announcing that one "can walk out from the highway to Año Nuevo Point and see these huge males moving around."

Reti: Oh, my God. I see.

Le Boeuf: The weekend after that publication, there were thousands of people walking about the dunes to view the seals.

Reti: Thousands?

Le Boeuf: Yes.

Reti: Wow.

Le Boeuf: And the head ranger, Roger Wirtz, was pulling out his hair. He didn't know what to do, because—well, they couldn't keep people away and they had no staff to control them. It was dangerous. The state had to do something quickly because someone might get hurt and they'd get sued. People didn't know how close you could get to these animals.

Over the next couple of months, the state agreed to an arrangement with the university. We would train students. We would provide students who would act as docents, leading tours to see the seals but keeping people at a safe distance. We set up the system and the rules and regulations. Later, we developed a course to provide the information that student-docents would convey to the visitors. The course was originally in the environmental studies board. Or maybe it was in biology and then it went to environmental studies, or vice versa. I don't remember. But basically, we decided that we wouldn't just educate them about the elephant seals, although this would be central information; we'd tell them about other marine mammals in the area—the students. We'd educate them on the plants, the terrestrial animals, the geology, the history, and the ecology of the

place. I got Gerry Weber to lecture on geology; Judy [Hanson] on marine plants; Breck Tyler on birds, and so forth.

It worked very well. The students were very excited about doing this, and they became the guides. The way we set things up still prevails today although student docents have been replaced by volunteers. Tourists in groups of 20 make their reservations in advance. They are met by the guide, who takes them out to the viewing area, and they get no closer than eight meters from any seal. A safe distance. The whole tour takes about two hours. Later it was decided up to twenty-five tours a day could be accommodated. A couple of years later, we published a book, *The Natural History of Año Nuevo*, which was effectively the textbook for the course.

Reti: I was curious because, you know, I took the class in 1980. I was a docent, and I wondered how much it had changed since then.⁷

Le Boeuf: Yes, what *has* changed was we had students doing it for five, six years, maybe more, something like that, and then gradually the parks got volunteers, and then the volunteers took over the job of guiding completely. We did some of the training and so did the rangers. The amazing thing is that there are some volunteers who have served as guides for twenty-five years. Ten years is almost average. And they don't get anything for it. I just wrote an article on this. If it weren't for the volunteers, the Parks and Recreation could not afford to open up

Año Nuevo for viewing, they couldn't afford to close it because they would not have the people, or sufficient rangers to keep people away. They would be back to where they were at the beginning.

I don't remember the exact figures, but I calculated that if you had to pay the guides, the volunteer guides, the minimum wage for the hours they work, it would cost three times more than the rangers are paid right now, or some ridiculous sum. They just couldn't do it. And the same thing is true of Piedras Blancas [Light Station], which is another elephant seal rookery south of Big Sur. There, too, the volunteers are vital for making this animal viewing spectacle work.

Reti: Fascinating.

Le Boeuf: So things have changed a lot.

Reti: And the students are no longer doing tours?

Le Boeuf: No.

Reti: What are they doing then, research?

⁷ The interviewer was an environmental studies major at UCSC and took Dr. Le Boeuf's course in 1980.

Le Boeuf: Someone has a class that is somewhat similar to the course that we taught, but it is not training students to act as docent-guides. This is Patrick Robinson, who works at Año Nuevo. You'd have to ask him about the content of that course.

So we've had a long relationship between UCSC and Año Nuevo. The important thing is this, is that Año Nuevo does a very good job—the Parks—of giving people an experience with what I call an animal-viewing spectacle, which is big business today. They charge a minimum amount of money, but it's a very high-quality experience, and they do this without interrupting the animals, the attraction. They give you a precious wildlife experience. You're out there, and there's a seal in front of you and behind you. It's not dangerous because they know what they're doing, but it's very special. It's quite different from what they do at Piedras Blancas, where everybody can view the animals but the communication with a docent is minimal.

Here, docents not only take them out among the elephant seals, but they have a storehouse of information to provide the public. This is based on continuous study of this colony annually since 1968. We can tell them the details of diving behavior when the animals leave, or why is it that they sand flip, or why is it that they breathe out of one nostril which is distal to the nostril closest to the sand, or why they hold their breath while they're sleeping? I mean, on and on it goes. Guides have all this information, so that it is not simply a cursory experience that

the tourist gets. So there's a good connection between ongoing research and Parks rangers that manage the site and the tourists that come to view the seals.

Now, that touches on something else. I always thought it would be to our advantage to have a field station on the mainland as we did on the island. This is important because nearly all of the research is now conducted on the mainland where most of the animals reside. A field station in situ would greatly facilitate our research. It would be a place student researchers to stay overnight, to cook meals, and to store records and equipment. This would reduce the time and costs of commuting to and from Santa Cruz. It's dangerous.

For years I tried to get the Parks to lease us, sell us, loan us a building there. The land was originally owned in part by a sculptor, and he this house at North Point from driftwood and adobe. It is an ideal place for a field station because there is electricity and water, and being isolated, it doesn't impinge on the tourist operation.

But we were never able to move the Parks to do that. I think the reason why is that you need someone high in our administration to talk to someone high in the Parks administration over a cup of coffee, and they say, "Oh, yeah, we can do that. That's no problem." That never happened.

Reti: That was one of the questions I had for you, following up from the interview you did in 1994. So that's interesting. You would think it would be a model for that kind of cooperation.

Le Boeuf: Well, yes, particularly because we make the state operation far better than it would be without ongoing research. Essentially, we provide the park rangers with the information, the story, to convey to visitors. It would serve the Parks to make our job easier because it is to their benefit

Reti: You did some historical research with Catherine Steele. Tell me about that.

Le Boeuf: Yes, I knew her and she provided me with some historical information. I wouldn't say a lot, but when we were doing this course—we were writing the book⁸, and I took on the onus—besides doing seals and the other marine mammals—of doing a history of the island area. One of the sources was Catherine Steele. I met with her on several occasions, and she provided me with information and photographs that appear in that chapter.

Reti: We have the archive of your research in Special Collections.⁹

Le Boeuf: Good. I'm sure there were many other people beside Catherine who could have provided a perspective on this, but one thing I learned about writing history is that it is endless. One must stop the research at some point and write. .

Reti: (laughs)

Le Boeuf: How much detail? At a certain point you got to make it readable and comprehensible to the reader, so at a certain point you've got to stop. I learned a lot doing this. Don't undertake writing history lightly.

Reti: It seems to me that the program you were developing with the Año Nuevo course is such a good example of the kind of education that UC Santa Cruz was and is really was best at.

Le Boeuf: I agree. The course and the experience students got were special. I was disappointed when I retired that no one immediately picked that up because it was very Santa Cruz, and the students just relished it. I remember only one course that I taught which was as popular. In the late 60s and early 70s, one had to teach a course in the college you were aligned with, in addition to courses one taught in your department. I joined Lawrence [R.] Blinks, a famous plant physiologist at the time, and a colleague in biology, to teach a course in wine appreciation. We were both very interested in wine. We first taught the course—called Committee A—to interested faculty in Crown College. We met every Monday night.

Reti: Committee A?

⁸ See Burney J. Le Boeuf, *Natural History of Año Nuevo* (Pacific Grove, CA: Otter B Books, 1981).

⁹ See Año Nuevo State Reserve Collection, MS 127 (Special Collections, UCSC Library).

Le Boeuf: Yes. It was a short lecture on wine or grape growing or some aspect of oenology, and then we had everybody bring five or six glasses, and we had a tasting, a practicum. It was a big hit. We followed the same format and designed a course for students, twenty-one years old or older, which we offered in 1969. I think that because Blinks was such a famous professor, the course was approved. Also, by way of explanation, it was permissible to teach a course in your avocation in the colleges at this time so long as one made a strong case.

Lawrence and I took only twelve or thirteen students because a bottle of wine could only go around that many. The setup was straightforward. We'd lecture for an hour, and then the students would break out their glasses, we'd pour blind and then we'd discuss the wines or the next hour or two. Wine loosens the tongue. Here is a seventy-five-year-old professor talking to students who are twenty-one. The wine and the format broke barriers, let me tell you. Students fought to get in this course. Lawrence and I taught it for a couple of years, and then it morphed into a course which Joe Miller and I taught. Joe Miller was the director of Lick Observatory. We taught the course for eight or nine years, until the college system changed. The course ended. Joe and I used to say: You know, it's really strange; we've had more students go into the wine business than into astronomy, or biology, our disciplines (laughs)

Another course, *The Natural History of Año Nuevo*, was equally special and unusual. It gave a very special experience, because in biology if you're doing lab science, you get the lecture, you read the book, and then you go in the lab and do

work. There's got to be a field equivalent to that if you're an evolutionary biologist. We're twenty-five minutes away from Año Nuevo, which is a place people would pay thousands of dollars to see what's happening there if it were Africa. It is like an African experience.

Reti: It's incredible.

Le Boeuf: Many students have, over the years, come back, thanked me for the experience.

Reti: Oh, it was one of the most formative classes I took, and one of the few that really stayed with me, because of the content. I go out there and I still remember things from when I was a guide.

Le Boeuf: Good.

Reti: Because you learn in a different way than when you're just studying a book.

Le Boeuf: Yes.

Reti: So one of the things you talked about at the end of your last interview as well was that you felt at that time that UCSC and the entire Monterey Bay area

was about to become this center of marine research. And since that time, certainly that prediction has come true, with all of the institutions that we have.

Le Boeuf: Right.

Reti: How did Año Nuevo research fit in to that, or does it?

Le Boeuf: Well, very clearly, from the time I got here, the Año Nuevo research showed that Santa Cruz had a very strong marine research component. At the same time, we started building a laboratory down at the Long Marine Lab. [Kenneth S.] Ken Norris was here, with a great reputation for whales.¹⁰ We hired several other people in the subsequent years; they continued to do marine research and we became well known for this research. Hopkins [Marine Station] was traditional but expanded. The state schools developed programs. [The Monterey Bay National Marine] Sanctuary was set up. All of these things escalated. But we were in there right from the very beginning.

Reti: There was a synergy going on here.

Le Boeuf: Yes. I'm delighted with how that's gone. There was an early plan for the Parks and Recreation to put up a large building to support tourism at Año Nuevo. I'm glad this did happen. The only remains of this are a large parking lot. Tourists are accommodated in the refurbished old barns.

Reti: It's beautiful.

Le Boeuf: Yes. So I like that low-key approach. I don't know what they're going to do at Piedras Blancas. There are only two small parking lots there to accommodate thousands of tourists annually.

Reti: Yes.

Le Boeuf: They've done a nice job. There are these two viewing areas—and there are these walkways, wooden walkways along the perimeter there—and the highway is only eight meters from the seals.

Reti: Oh, yes. It's crazy.

Le Boeuf: I mean, the seals are a stone's throw away. And the only thing that limits the number of tourists is parking spaces. If you're driving by, you've got to have a place to park. And the seals continue to expand north and south.

Le Boeuf: What else about the early years? Well, let's not forget that it was a great experience to spend a weekend with the students in that situation. You get to know them. I remember one student, [Ronald J.] Ron Whiting—he was the son of the Whitings that ran the boardwalk.

¹⁰ See Randall Jarrell, Editor, *Kenneth S. Norris: Naturalist, Cetologist, Conservationist, 1924-1998*. (Regional History Project, UCSC Library, 1999) <http://library.ucsc.edu/reg-hist/norris>

Reti: —concession, right.

Le Boeuf: He was terrific. He was an undergraduate, but one of the finest young researchers we had. But when it came time to graduate, he decided to continue in Dad's business. I haven't seen him since. He would have made a fine biologist.

Reti: And then you had graduate students working with you.

Le Boeuf: A year and a half after I arrived here, I inherited some students from Dick Peterson when he died, and then annually I took in more new students. Over the course of my tenure here, I've had about twenty-five graduate students matriculate. I always likened a professor-graduate student relationship to like another marriage. The student requires much attention. And, as often happens, some of these students, you're still in contact with very closely and are good friends, and others, you're not, and others, it's half and half. That happens.

Reti: Do you have any thoughts that you want to share about the direction that UCSC has gone since the early days?

Le Boeuf: Well, it's different. In the early days, we had the colleges. It was very intimate. You got to know people very well. What I really liked about the colleges was you would meet socially once a week. You were invited to come to dinner and the cocktail hour in advance. And I think the most interesting thing to

me was that your colleagues were in completely different disciplines: German literature, mathematics or geology, or what have you.

Reti: You were at Crown College.

Le Boeuf: I was in Crown, yes. But in a social situation, one of the questions that always comes up is, "Well, what do you do?" "I'm in German literature." "Well, I study Chaucer." "Well, how do you do that?" Well, you start asking questions about how you do that. "What's your explanatory paradigm?" And that professor might say, "Well, I go with the Freudian thing." And you say, "Well, Freud's not very well accepted in psychology today." And then it starts getting very interesting (laughs) because, you know, academics, intellectuals, are very threatened about what they know. But that's the good part. Ask me a question, and I have to say, "Well, you know, I like the Darwinian explanation of why trees look the way they do, why animals act the way they do, why we have parasites," and all of that. It makes sense to me. It explains why life is the way it is. I've got to be able to explain that or my research to others in other disciplines.

But, by the same token, they have to as well. Maybe it's a little more difficult if you're talking to someone in mathematics. Maybe only twelve people in the world understand the question they're asking. You can't expect them to explain it to you. But that was the good part. You had to explain your explanatory paradigm to others. You explain what you're doing without complicating it too

much, and you expected to get that from the others. That was exciting. It's quite different when you get into a department and everybody's trained the same way.

So I had a very fast introduction. I hit the ground running here. The research went well and I published papers. Getting tenure wasn't a problem.

I visited Harvard in 1972, and that was exciting because of change in the paradigm in biology occurring at the time. Robert L. Trivers, a graduate student at Harvard, was central to these changes. We became friends. We saw eye to eye on paradigm shift. I had the data, he had the theory, and they matched very well. Later, when we were trying to hire an evolutionary biologist, I put his name up, and he ended up getting the job. He stayed here for twelve years. An incredible scientist.

When I came back from that stint at Harvard, I was very excited about lecturing. It was the most interesting period of teaching for me because of the new paradigm, which we called sociobiology. [Edward O. or E.O.] Ed Wilson wrote the book on sociobiology in 1975 [*Sociobiology: The New Synthesis*]. I had the pleasure of teaching a graduate seminar at Harvard with Ed Wilson. Many of the ideas in the book were from Trivers. That was the exciting new way of explaining animal behavior and I dove full into it. It was an exciting time because I was still going to meetings of people who were doing hormones and behavior, my original studies. Sociobiology was controversial. A professor of behavioral endocrinology from Stanford, stopped talking to me when I told him about my

interest in sociobiology. Some of them considered that if you were into that movement, you were a traitor, and they didn't even want to talk to you. Ed Wilson gave a talk in San Francisco, and somebody poured a bucket of water over his head.

Reti: Oh, my God!

Le Boeuf: Today, sociobiology or neo-Darwinian biology, is acceptable. That's just Darwinian biology. But at the time—I remember one episode. My former professor was having a festschrift and I was asked to give a talk, and so was my colleague, Leonore Rothstein. But we were at the cocktail party the night before—we were both very nervous about our talks. I said, "Well, I'm going to say something tomorrow, and I'm not sure the audience is ready for this." And she said the same thing.

So the next day came, I gave my talk, and it was about basically the rise of sociobiology, how we had to look at animal behavior from the point of view of neo-Darwinian bio[logy], and those are the explanations that are most important. This was going to be published in a book after that, and it was. She, on the other hand, was talking about the study of human sexuality. She got heavy into that, and she is still doing it, and she does a great job of it. But right after the talk, right after I talked and she talked, we were meeting in the back room with other people, and she looked at me with daggers in her eyes. I don't think we've spoken to each other since that time. Her interpretation was that I was promoted

a science diametrically opposed to what she proposed. It was not but she saw it this way. But it was that kind of thing. The professor from Stanford, he was just violent in saying, "You believe in that crap?" People got so involved! But that was exciting! I enjoyed it, but sometimes there were reactions like that that were unpredictable. It's probably that way in other fields. Imagine the reaction to telling someone that has spent his life studying Freud, that psychoanalysis does not work. Those were the times. So I'm fortunate that I was there and doing research that helped change the paradigm.

Okay, let me just give you a quick summary of my research on elephant seals. When I first started doing this work at Año Nuevo, I was primarily interested in understanding the behavior of the animals. And a lot of it had to do with the fact that in elephant seals you have a highly polygynous society, where a few males monopolize mating with all the females. Very extreme. And also the males can be three to ten times larger than the females, almost like a different species.

We learned very early on that you had to mark the animals, to identify them, in order to understand what was going on, the game they were playing. We'd document the fact that one male would have 90 percent of the matings in a season, and he would come back and do the same thing. And then we actually carried that further and published a paper on what we call lifetime reproductive success, an estimate of how many pups a male would sire in a lifetime. Of course, we were doing studies of females at the same time. And basically the conclusion we came to is that the reproductive potential in males and female

elephant seals is quite different. Males have very high reproductive potential. One individual can generate many offspring, up to a couple of hundred in a lifetime. But very few of them succeed in producing any offspring; most of them lose completely.

Females, on the other hand, have relatively low reproductive potential. They can generate very few offspring because they can only generate one per year, and then it's a function of how early they start breeding and how long they live. A productive female may produce 12-13 pups in her lifetime.

Reti: In your lifetime.

Le Boeuf: In your lifetime. Now, most females will breed, put out a pup or two, and if they live long will put out up to twelve, so the reproductive potential is quite different. But that, in turn, determines the behavior of the males, who take a lot of chances because they've got to get in this privileged club to be a breeder. If they don't, they strike out completely, whereas females can be more relaxed because a female will have no problem finding a mate. Anyway, that was a big part of it. And then from there, gradually we started doing physiology. We got interested in how they get along without water, how can they fast for up to a hundred days without eating or drinking? We were interested in other behavior studies on dialects and the sounds they make and how different islands have different dialects and what might be the purpose of that.

But the big general picture is that from behavior we got into physiology. And then from physiology, we got into what they were doing in the water, at sea. For us at that time, we were doing all of our work on the island or the mainland, whether it's behavior or physiology. And when the seals went in the water, it was a like a black hole. All we knew is they went out there; they fed because they came back fatter, and they came back months later. But what they did, and how they did it, we had no clue.

Reti: I can remember that. On the tours all we said was, "Well, they go out to sea."

Le Boeuf: That's it. About this time, we start to put devices on them to measure the diving pattern, and very quickly the devices became increasingly more sophisticated. At first we were putting on a little film, which is etched by an LED, which gave us at most six days of recording. Then we had to digitize the record to analyze it, which was laborious. Later, we used sensors with miniature hard discs to store the data as it was being collected. In a short time the technology advanced such that we were able to record diving events every five to ten seconds over an entire period that the seal was at sea. The recorders have become increasingly sophisticated making it possible to measure the many variables important in diving, foraging and migration.

Now, with the elephant seal, blessed animal that it is, it's predictable that they come back to the same place again. And so with adult females, adult males, a

little bit less, if you put an expensive instrument on the animal, with the female, say an adult female in their prime, you have about a 90 percent chance of getting it back. It'll come back, and you recover it. And these instruments at the time were twenty-five hundred dollars apiece and they increased your cost. And so unlike, let's say, cancer research or whatever, we didn't have that much money to play with. But we got a lot of information in a very short time. And then many other people studying other animals started to do similar things, not only with seals and sea lions, but also with whales and sea otters.

Reti: So you were pioneering this type of research.

Le Boeuf: We weren't the very first. [Gerald] Jerry Kooyman at Scripps started working on this by himself, and then my ex-student, Roger Gentry, did some work on fur seals. And I was envious! I said, "This is really good stuff." And then I did a collaborative thing with Jerry Kooyman, and then we started doing our own studies. The research just took off. What can I say? That led to studies where you determine the migratory route. You can determine not only where they go but also where they are foraging. We showed that adult males return to the exact same place to forage year after year 3,000 miles away!

Reti: How do they navigate?

Le Boeuf: It's hard to answer that question unless you're in a laboratory. We don't know. All we know is they do it. They do it unerringly. And in some cases,

you have the track of going out there and coming back in one year; the second year, you can almost overlap it.

We did similar research with white sharks that prey on elephant seals.

Reti: This period is also the period in which you have the emergence of digital technology.

Le Boeuf: Exactly.

Reti: So you completely took advantage of those developments.

Le Boeuf: No question about it.

Reti: That's very exciting.

Le Boeuf: I remember early on at some point, as part of the studies of diving, I worked with a fellow, and we put on a TV camera on the back of the animal, which would record what it sees as it swims and dives. This video recorder was immense. It was about this big [demonstrates], and it was about like that [demonstrates], and we're putting it on a pup that's maybe 300 pounds. It was worth maybe \$4500-4800. We had learned that if you captured these young animals, and displaced soon after, they returning to site of capture just like homing pigeons. So we could exploit this as a way to improve diving

instruments or to study diving behavior, and that's what we did. We put this camera on a juvenile seal. But one had to wait 1-4 days for it to return. And this guy is sweating bullets because his \$4800 instrument is attached to the back of a seal somewhere at sea.

Reti: Oh, my God!

Le Boeuf: So here again, the evolution of the science. And more and more things are being put on them.

So that's just the big picture. Along the way, I did pesticide studies, where we took tissue from animals to show that they had high levels of DDT, DDE, owing in large part to the Monsanto residue at San Pedro in Southern California, which continues to spew out to this day.

There were other side issues, but those are the big perspectives: the behavior, the physiology, the diving pattern, the diving physiology, the migration routes. And I would say that as a result of our studies, in large part, the elephant seal is one of the best-known, best-studied animals in the world, and that includes terrestrial animals as well. We chose the right animal to study because one can mark them, can tag them, collect blood and tissue, etc., and they are robust against human disturbance.

Reti: Well, Burney, thank you very much for your time.

About the Interviewers

Interviewer:

Randall Jarrell 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 and an M.A. in History from the University of California, Santa Cruz, in 1978. She worked as a journalist before her appointment in 1974 as director of the Regional History Project, and retired from the Project in 2004.

Editor:

Irene Reti was born in Los Angeles and moved to Santa Cruz in 1978. She received her B.A. in Environmental Studies from the University of California, Santa Cruz in 1982 and a M.A. in history from UCSC in 2004. Reti began working with the Regional History Project in 1989 and has been the Director of Regional History since 2004.