

# 1 *A brief historical timeline of research on the Arashiyama macaques*

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The history of research on the Japanese macaques, starting at Arashiyama-Kyoto in 1948 in Japan to one fissioned troop's relocation in Texas, has been described in detail by Huffman (1991) and Fedigan (1991), respectively, in *The Monkeys of Arashiyama: Thirty-five Years of Research in Japan and the West*. We refer the reader to these two chapters for historic details prior to 1991. Here we present a brief historical timeline of research on the three main study groups of Arashiyama macaques (respectively in Kyoto, Japan, Texas, USA and Montréal, Canada) up to the present, spanning more than 60 years, to put the work presented in this book into perspective.

Looking at the impressive list of 115 people who have played a role as researcher and/or advisor of research on the Arashiyama macaques since 1948, we can see the high degree of connectivity this site has had throughout the history of primatology (Table 1.1). Arashiyama has played the dual role of a training and study site for graduate students and many prominent Japanese and international researchers alike. From the 93 researchers who conducted research on one or more of these three main Arashiyama research groups, 75 academic degrees (24 PhD or DSc degrees, 46 MA or MSc degrees and five Bachelor degrees) have been awarded, in full or in part for their work. Regardless of the capacity of their participation in the activities, every individual has made an important contribution to the accumulation of knowledge that makes the Arashiyama macaques the valuable resource that they are.

The first overseas scientists, two graduate students from the USA, to conduct research at Arashiyama were Steven Green and Gordon Stephenson. They were part of a joint Japanese–American research project set up in 1968 by senior Kyoto University Professor Ryoji Motoyoshi and Professor John T. Emlen of the University of Wisconsin. From these humble beginnings,

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Table 1.1. *Who's who in primatological research of Arashiyama monkeys*

Researcher (degrees obtained for this research)	Period of fieldwork	Current academic affiliation/ Direct involvement	Site	Main advisor(s)
Ohta, Eiji	1948-1970s	Deceased	Kyoto	
Itani, Junichiro	1951	Deceased	Kyoto	
Hazama, Naonosuke	1951, 1954-1961	Deceased	Kyoto	
Kawamura, Shunzo	1951-periodically to 1980s	Deceased	Kyoto	
Sugiyama, Yukimaru	1958	Prof. Emeritus, Kyoto University	Kyoto, Texas	S. Kawamura
Koyama, Naoki (DSc)	1964-1967, 1972-1990s	Prof. Emeritus, Kyoto University	Kyoto	S. Kawamura
Norikoshi, Koshi (DSc)	1967-1972	Prof. Emeritus, Sophia University	Kyoto, Texas	P. Marler
Green, Steven (PhD)	1968-1969	University of Miami	Kyoto, Texas	J. Emilen
Stephenson, Gordon (PhD)	1969, 1972	Retired, University of Wisconsin	Kyoto, Texas	
Mano, Tetsuzo	1969-1972	Retired	Kyoto, Texas	
Casey, Denise E.	1972	Northern Rockies Conservation Cooperative	Texas	
Clark, Tim W.	1972	Yale School of Forestry and Environmental Studies	Texas	O. L. Davis C. Bramblett
Fedigan, Larry (PhD)	1972-1974, 1978-1979	Deceased	Texas	
Fedigan, Linda M. (PhD)	1972-1996	University of Calgary	Texas	
Nishida, Kenichi (BSc, MA)	1973-1974	n/a	Kyoto	J. C. Neese
Gouzoules, Harold (PhD)	1973-1975, 1977-1978	Emory University	Texas	P. E. Simonds
Wolfe, Linda D. (PhD)	1973-1978	East Carolina University	Kyoto, Texas	
Koyama, Takamasa	1974	Japan Women's University	Kyoto, Texas	
Takaragawa, Norihisa	1975-1976	Chiba City Zoo	Kyoto	R. Tuttle
Gouzoules, Sarah (MA, PhD)	1975, 1977-1978	Emory University	Texas	Y. Sugiyama
Grewal, Baldev S. (MSc, PhD)	1975-1978	Deceased	Kyoto	J. Itani
Takahata, Yukio (MSc, DSc)	1975-1978	Kwansai Gakuin University	Kyoto	
Quick, Larry B.	1976	n/a	Texas	C. Bramblett
Ehardt, Carolyn (PhD)	1978-1979	University of Texas at San Antonio	Texas	L. M. Fedigan
Allan, Brian (Honour's thesis)	1979	n/a	Texas	

Name	Year	Education	Period	Field	Institution	Location	Editor
Blouni, Ben C. (PhD)	1979, 1981			Social & Ecological Informatics, Helotes		Texas	J. Gumper/
Noyes, M. J. Subra	1979-1981			n/a		Texas	
Huffman, Michael A. (BSc, MSc, DSc)	1979-1980, 1983-1989, periodically to the present			Kyoto University		Kyoto	J. Itani
Griffin, Lou	1980-2002			n/a		Texas	
Bullard, Jeff (MA)	1981			n/a		Texas	L. M. Fedigan
Matsuura, Nagako (BSc)	1981			n/a		Kyoto	T. Kawamichi
Mehrhof, Barbara (MA)	1981			n/a		Texas	J. F. Oates
Suzuki, Hisayo (BSc)	1981, 1983-1989			n/a		Kyoto	T. Kawamichi
Pavelka, Mary S.M. (MA, PhD)	1981-1987, 1991, 1993-1996			University of Calgary		Texas	L. M. Fedigan
Hauser, Marc	1982			Harvard University		Texas	
Masataka, Nobuo	1982			Kyoto University		Kyoto, Texas	
Platt, Meredith M.	1982			Retired		Texas	
Negayama, Koichi	1982-1983			Waseda University		Kyoto, Texas	
Ando, Akihito	1983			Mukogawa Women's University		Texas	
Collinge, Nancy (MA)	1983			Deceased		Texas	L. M. Fedigan
Kamada, Jiro	1983			Kansai University of Social Welfare		Texas	
Kondo-Ikemura, Kiyomi	1983			Health Sciences University of Hokkaido		Texas	
Nakamichi, Masayuki	1983			Osaka University		Kyoto, Texas	
Yoshida, Atsuya	1983			The University of Tokushima		Texas	
Quiatt, Duane	1984			Professor Emeritus University of Colorado		Kyoto	
Mignault, Christiane (MSc)	1984-1985			Collège Edouard-Montpetit		Montréal	B. Chapais
Sicotte, Pascale (MSc)	1984-1987			University of Calgary		Montréal	B. Chapais
Chapuis, Bernard	1984-1998			University of Montréal		Montréal	
Larose, François (MSc)	1985-1986			Grant MacEwan University		Montréal	B. Chapais
Inoue-Nakamura, Miho (MSc)	1985-1987			Kyoto University		Kyoto	O. Takenaka
Girard, Michèle (MSc)	1986-1988			n/a		Montréal	B. Chapais
Primi, Ginette (MSc)	1987			n/a		Montréal	B. Chapais
Gauthier, Carole (MSc)	1987-1998			n/a		Montréal	B. Chapais

Table 1.1. (cont.)

Researcher (degrees obtained for this research)	Period of fieldwork	Current academic affiliation/ Direct involvement	Site	Main advisor(s)
Ogawa, Hideshi	1987-1988, 2000-2002	Chukyo University	Kyoto	B. Chapais
Tejairo, Shona (MSc)	1988	University of Montréal	Montréal	B. Chapais
Lecomte, Michel (MSc)	1989	Collège de Valleyfield	Texas	M.S.M. Pavelka
Cunneyworth, Pamela (MA)	1990	n/a	Texas	P. Asquith
Giancarlo, Christine (MA)	1990-1991	Mount Royal University	Montréal	B. Chapais
Prud'homme, Jean (MSc)	1991-1998	University of Montréal	Texas	M.S.M. Pavelka
Paterson, James D.	1992	University of Calgary	Texas	T. Nishida
Wyman, Tracy (MA)	1992-1999	University of Calgary	Kyoto	(H. Ihobe)
Takenoshita, Yuji (MSc)	1992-1998, 2003	Chubu-Gakuin University	Kyoto	B. Chapais
Gates St-Pierre, Claude-Eric (MSc)	1993	n/a	Montréal	
Norman, Sherry (MA)	1993	n/a	Texas	M.S.M. Pavelka
Tillekeratne, Sasrika (MA)	1993	University of Victoria	Texas	M.S.M. Pavelka
Koyama, Nicola F. (PhD)	1993-1994	Liverpool John Moores University	Kyoto	R. Dunbar
Vasey, Paul L. (PhD)	1993-present	University of Lethbridge	Montréal, Kyoto	B. Chapais
Jack, Katherine (MA)	1994-1996	Tulane University	Texas	M.S.M. Pavelka
Lamarsh, Craig (MA)	1994-1996	n/a	Texas	M.S.M. Pavelka
Shimizu, Keiko	1994-present	Okayama University of Science	Kyoto	B. Chapais
Savard, Leanne (MSc)	1996	n/a	Montréal	T. Nishida
Zamma, Koichiro (MSc, PhD)	1996-1998	Hayashibara Great Ape Research Institute	Kyoto	T. Nishida
Kaneko, Makoto (MSc)	1996-1998	n/a	Kyoto	L.M. Fedigan
O'Neill, Ann (MA)	1997-1998	n/a	Texas	B. Chapais
Belisle, Patrick (MSc, PhD)	1997-1998	Collège Lionel-Groulx	Montréal	T. Nishida
Wakibara, James (MSc)	1998-1999	Tanzania National Parks	Kyoto	(M. A. Huffman)
Ueno, Ari (MSc)	1999	University of Shiga Prefecture	Kyoto	T. Kano
	2000-2001	Health Canada	Kyoto	A. Mori

Shimada, Masaki (MSc, PhD)	1999-2000, 2004	Teikyo University of Science	T. Nishida
Kashiwabara, Slio (MSc)	2000	Kyoto University	A. Mori
Nishie, Hitonaru (MSc)	2000-2002	Kyoto University	J. Nishida
Kovacovsky, Stefan	2001	n/a	T. Nishida,
Inoue, Eiji (MSc, PhD)	2001-2003	Kyoto University	J. Yamagiwa
Fujimoto, Mariko (MSc, PhD)	2002-2004	Kyoto University	A. Nishimura,
Nishimura, Hirohisa (MSc)	2003	Kyoto University	H. Takeshita
Hanamura, Shunkichi (MSc)	2003-2004	Kyoto University	M. A. Huffman
Asai, Kenichiro (MSc)	2004-2005	Kyoto University	J. Yamagiwa,
			N. Nakagawa
			J. Yamagiwa,
			N. Nakagawa
Leca, Jean-Baptiste	2004-present	University of Lethbridge	P. L. Vasey
Duckworth, Nadine (BSc)	2005	n/a	J. Yamagiwa
Chalmers, Alisa (MSc)	2006-2009	Cornell Medical College	P. L. Vasey
VanderLaan, Doug (PhD)	2007	University of Lethbridge	J. Yamagiwa,
Inuma, Kenji (MSc)	2007-2008	Kyoto University	N. Nakagawa
Gunst, Noëlle	2008-present	University of Lethbridge	

\*People included in this list either published at least one article/report/abstract from research on Arashiyama monkeys, obtained an academic degree from research on Arashiyama monkeys, or played a leading role in the supervision of students conducting research on Arashiyama monkeys. We excluded research on biological samples collected from captive housed Arashiyama (Kyoto) macaques, for which no field work was done.

Site: (1) Kyoto: Arashiyama-Kyoto troops (A, B, E), Japan; (2) Texas: Arashiyama-West (A-troop), USA; and (3) Montréal troop (artificially formed and captive group), Canada.

\*Main advisor(s) refers to the academic advisor(s) of researchers who conducted research on Arashiyama monkeys for their academic degrees. Despite extensive searching, some information could not be obtained or double-checked. Those cases are noted as n/a.

Arashiyama has taken on a very active role in the internationalisation of primatology in Japan, hosting many researchers from such countries as the USA, Canada, the UK, France, India and Tanzania. This activity has resulted in publications on a wide variety of topics ranging from basic ecology and biology to social behaviour, endocrinology, genetics and reproductive physiology (see Appendix).

### 1.1 Arashiyama troops in Japan

The beginning of research at Arashiyama was simultaneous with the beginning of primatological research in Japan. This is no coincidence given that the beginnings of primatology in Japan came from a group of scientists based at Kyoto University in the laboratory of Ecology led by Denzaburo Miyadi and Kinji Imanishi. The first members included a group of then young students, Junichiro Itani, Shunzo Kawamura, Naonosuke Hazama, Masao Kawai, Tadao Umesao and Kisaburo Tokuda. Unknown to them at the time, Eiji Ohta (see chapter 2) had already begun his own observations of the monkeys at Arashiyama. Ohta was an educator and later became one of the founding members of the Arashiyama Natural History Society, a gathering of local naturalists, primatologists and other members of the local community who supported and promoted research and education at the site for many years. Of the Kyoto University Primate Research Group members, Hazama, in collaboration with local entrepreneurs, agreed upon a plan to observe and habituate the monkeys for the joint purpose of tourism and scientific research in 1954. The land on which the provisioning grounds were set up and the tourist facilities constructed was donated by businessman Sonosuke Iwata, of which the family name is given to the mountain it sits upon (Mt. Iwata or Iwatayama, in Japanese). The Iwatayama Monkey Park in Arashiyama was officially opened to the public in March 1957. Iwata supplemented the financial operation of the tourist park until 1974, when due to financial problems it was sold to Kyoto City and was made a protected historical reserve (Huffman, 1991).

With the assistance of Eiji Furukawa, Shizuma Hirose, Kinya Nakajima and others, provisioning succeeded in 1955, two years after Hazama's ecological study began (see Huffman and MacIntosh: chapter 17). It was at this time that Hazama and his associates began to name each monkey, forming the basis of what were later to become the kin names of their progeny that laid the ground work for some of the earliest, most detailed studies, on kinship-based social organisation and social networks in primates. In 1958 Hazama moved on to study monkeys living on Mt. Hiei, 18 km to the east of Arashiyama on th

opposite side of Kyoto City (see Figure 1.1a). The maintenance of genealogical records and demographic data was continued by park staff and researchers, and formed the groundwork that allowed Naoki Koyama and Koshi Norikoshi, both graduate students of Kawamura, then based at Osaka City University, to document in detail the process of troop fission and male transfer between 1964 and 1966. After the troop fissioned into two stable social units, Arashiyama A and B troops, they coexisted on Mt. Iwata until 1972, B troop being dominant over A troop. During this time, the phenomena of male transfer and social re-organisation were also documented in detail (see Koyama, 1970; Norikoshi and Koyama, 1975; Norikoshi, 1977).

After this event, three troop fissions have been documented, albeit not in the detail that Koyama and Norikoshi did. The first fission was in early 1978. A 14-member splinter group (C troop) was formed by 12 members of the Kusha kin-group and two adult peripheral males who joined them. They were subsequently captured and sent to the Choju City Zoo in southern South Korea. In May 1978 a second splinter group of approximately 28 members was recognised by the park staff. Fifteen of these were selected and sent to the Kaibara Family Land, an amusement park in Hyogo Prefecture, Japan. In 1981, a small number of monkeys, not the product of natural troop fission, were transferred from Arashiyama to the Primate Research Institute of Kyoto University for breeding purposes. Members of this group have been the subjects of various behavioural and psychological investigations (e.g. Kubota, 1990, 1991; Leca *et al.*, 2007).

The last troop fission to date was completed by September 1986. B troop fissioned into two sister troops, E ( $n = 149$ ) and F ( $n = 97$ ). This event has been described by Huffman (1991). The two troops shared the same feeding grounds, but E troop was subordinate to F troop and eventually moved further and further away from the Iwatayama site into the mountains to the west, becoming dependent once again largely upon natural foods from the forest, but also occasionally from family garden plots at the edge of Arashiyama town. From the late 1990s up to a few years ago attempts were made to follow them in the forest and on the other side of the mountain range in the farm and residential areas on the outskirts of Kameoka City, by Akisato Nishimura and his students from Doshisha University in Kyoto. There has been no recent updated news about F troop's whereabouts since then. Of all the Arashiyama fissioned troops, F troop is the only one from Arashiyama to re-establish itself in a new home range away from Iwatayama, in part of the original Arashiyama troop's pre-1954 home range.

Management of the troops' genealogical records was first maintained by researchers with the assistance of the provisioning staff, with each successive generation training their juniors in individual identification of the monkeys.

From the beginning of his studies, Koyama was perhaps the most instrumental in maintaining the demographic database and genealogy of the troops well into the early 1990s. In the spring of 1976, Nobuo Asaba, a local entrepreneur, became the new park director. At this time, Yukio Takahata, then a graduate student of Itani's at Kyoto University, taught him to identify the monkeys. Asaba and his family took over the management of the park and Asaba breathed new life into it, just at the time when researchers in Japan were beginning to redirect their efforts towards wild, non-provisioned populations of macaques on the islands of Yakushima and Kinkazan. From this point on, the yearly birth, death, arrival and disappearance records were maintained and the genealogy updated yearly by Asaba and his hired staff, many trained biologists. When Asaba took on the duties of park director he relinquished the day-to-day duties of his previous business to his employees and made the maintenance of the park, provisioning of the monkeys, support of researchers and maintenance of the genealogical records his life's work, until his death in 2001 (Figure 1.1). His second son, Shinsuke Asaba, took over as director of the Iwatayama Monkey Park shortly after his father's death, and continues this work today, with the same dedication to protect the monkeys, educate the visitors and ensure the livelihood of his hardworking staff, without the financial support of universities or the government (Figure 1.1). In the tradition of the elder Asaba, this family-run business continues to generously support researchers who come to work here. Every year, undergraduate students from the Faculty of Science at Kyoto University conduct research at Arashiyama. The University of Osaka's Graduate School of Human Sciences and Osaka City University have also had a long record of research activity on the Arashiyama macaques (Table 1.1).

In other ways, fruitful collaborations between educators and scientists have also greatly utilised this invaluable resource for schoolchildren and the local community to educate them about the value of wildlife and protection of the environment. The Arashiyama E troop remains an important research resource in Japan (see Takenoshita and Maekawa: chapter 19). Without the Asaba family's continued dedication, this would not be possible.

## **1.2 Arashiyama West troop in Texas**

In 1966, the original Arashiyama troop had grown to 163, at which time it fissioned. The resulting two groups were named the Arashiyama A and B troops. A by-product of the joint research project of Motoyoshi and Emlen was the relocation of Arashiyama A troop to the USA. A group of prominent American primatologists (including Clarence R. Carpenter, Carl B. Koford, John King, Eugene Sackett, William Mason, Peter Marler, Charles Southwick,





Figure 1.1. Iwatayama Monkey Park, Arashiyama-Kyoto site, Japan. (a) Field station and visitors centre in 1980; Mt. Hiei is the highest peak in the background on the other side of Kyoto City (photo by M. A. Huffman); (b) Nobuo Asaba (far right) with Masaki Shimada, Susumu Kashiwabara and Hitonaru Nishie (from left to right), three young researchers from Kyoto University in the feeding station office, October 2000 (photo by M. A. Huffman); (c) Shinsuke Asaba (front row, far right) with Yuusuke Kataoka, Shinya Tamada, Yuuto Kobayashi (back row from left to right), Nanako Kunugi and Yuuko Tomita (front row from left to right), five staff members (courtesy of S. Asaba); (d) First feeding site in the early 1950s (anonymous photographer, courtesy of the late N. Asaba).



Figure 1.1. (*cont.*)

John Vandenburg and Bruce Alexander) were gathered to investigate the logistics of relocating the troop (Huffman, 1991). Claud Bramblett, an anthropologist at the University of Texas in Austin, was also contacted by Emlen about the search for a new home for the Arashiyama A group. One day, Bramblett mentioned this to students in one of his primatology classes. By chance, one of the four daughters of a Texas rancher, Edward Dryden Jr. was taking that

course. She mentioned to her father that a group of scientists were looking for a new home for these monkeys where they would be kept outdoors in a large enclosure with the core group intact. Intrigued and eager to help, he offered the use of his land. In February 1972, the A troop, with complete genealogies and individual recognition, was finally translocated to Dryden's ranch in La Moca, Texas. Arashiyama researchers, including Tetsuzo Mano along with their American counterparts, Tim Clark, Steven Green and Gordon Stephenson, who had monitored the group back at Arashiyama, accompanied the troop to Texas. The troop's adaptation to its new environment was one of the first topics of research (Figure 1.2).

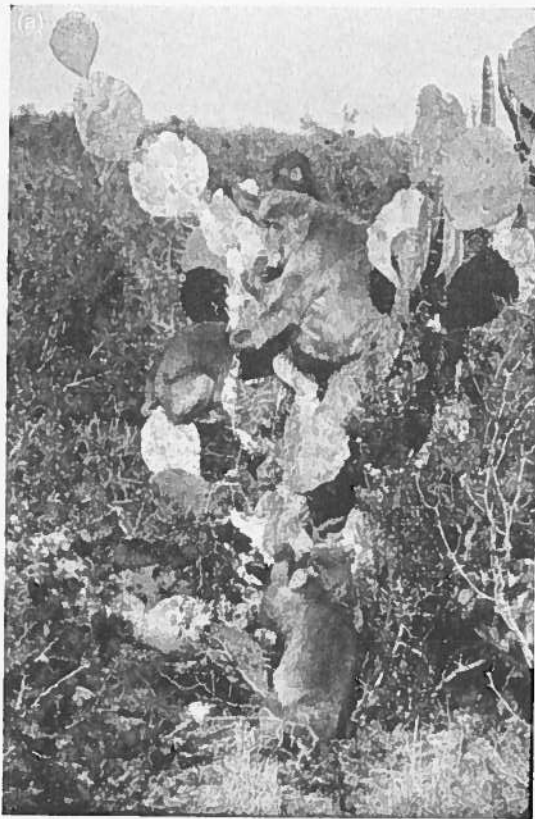


Figure 1.2. Arashiyama West site at Dilley, Texas, USA. (a) Rheus-58, alpha female, with several of her offspring, in a prickly pear cactus (photo by Linda Fedigan); (b) Adult female foraging with her offspring on her back; (c) Lady Di (Betta-59-66-78) and her infant female Carmen (Betta-59-66-78-89) (photos b and c by the late K. Dickey, courtesy of L. Fedigan and T. Wyman).

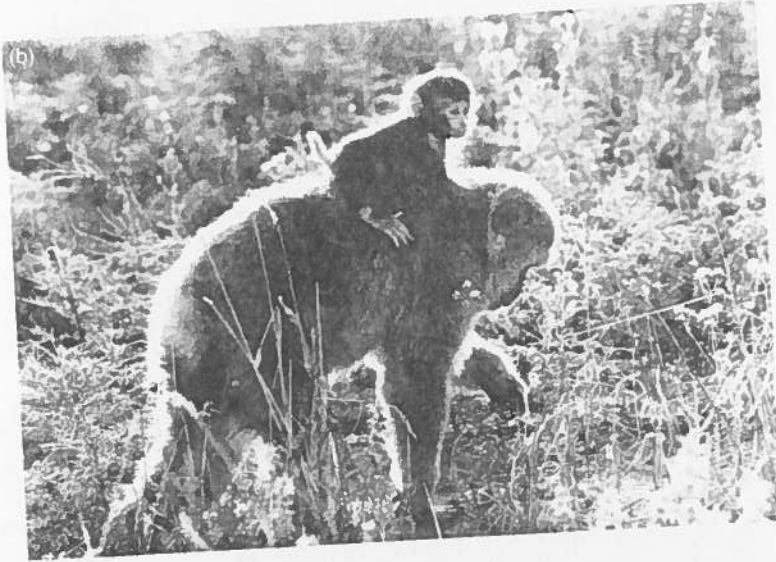


Figure 1.2. (cont.)

The security of the troop and maintenance of the site were never easy and were dependent upon the generosity and goodwill of people like Dryden who provided land and facilities. The troop stayed at La Moca between 1972 and 1980. Even after Dryden's death in 1973, the group was financially sustained largely by the Dryden family who continued to run the site as a commercial operation, selling monkeys to zoos and research colonies, while maintaining

the scientific value of the troop for research. In August 1980, due to financial considerations, the troop was moved to a new site on the Dilley homestead, 37 km to the north of La Moca (Fedigan, 1991).

Support of the troop at Dilley was taken over by a non-profit organisation of interested researchers called the Arashiyama West Institute under the leadership of Bramblett and Lou Griffin, with funds from an NSF grant received by the Arashiyama West Institute researchers. A core group of North American researchers oversaw a very productive 27-year period of research and educational activities at La Moca and Dilley that lasted up until 1999. During this time, the difficult task of site manager was taken on in succession by eight dedicated researchers (Tim Clark, 1972; Linda and Larry Fedigan, 1972–74, 78–79; Tim Johnston, 1972–73; Harold Gouzoules, 1973–75, 77–78; Sarah Gouzoules, 1977–78; Sabra Noyes, 1979–81; Lou Griffin, 1980–2002) (Fedigan, 1991). Of all the managers and researchers, Griffin in particular, dedicated many years of her personal time and resources at the site to ensure that the monkeys had a secure home. Faculty at the University of Alberta and the University of Calgary, Linda Fedigan, James Paterson and Mary Pavelka ran a successful field school at the site for many years. A new generation of Japanese researchers (Table 1.1), many from Osaka University, also periodically visited and conducted research on the troop and investigated a number of sociological topics, comparing these results with the sister troop back in Japan or other sites of free-ranging provisioned Japanese macaques. Though Bramblett never conducted research on the troop himself, he played an active and pillar role as student advisor, fundraiser and leader in the management of the facilities from 1972 to 1992.

In December 1999, research at the site ceased, when control of the Arashiyama West colony was taken over by the Animal Protection Institute (API). API (now known as 'Born Free, USA') is a national, non-profit animal advocacy organisation based in Sacramento, California. After taking over supervision and care of the Arashiyama West monkeys and purchasing the land on which they resided near San Antonio, Texas, API established the 'Born Free USA Primate Sanctuary'. Professor Linda Wolfe, a researcher with experience on both the Arashiyama-Kyoto and Arashiyama West troops, has been helping out at the Born Free Sanctuary for the last few years.

This sanctuary at Dilley (<http://www.bornfreeusa.org/sanctuary/>) is now home to several primate species (many of which were rescued from pet and entertainment venues), which are kept in separate outdoor enclosures. While research is no longer conducted on the Arashiyama West monkeys and visits to the sanctuary are not encouraged, video releases and requests for donations/sponsors of individual monkeys do show that the Japanese monkeys continue to interact socially and range over native habitat in the large enclosures of the south Texas sanctuary.

### 1.3 The Montréal troop

In the early 1980s, Bernard Chapais contacted Lou Griffin, who was then manager at the Arashiyama West site, and he expressed an interest in creating a Japanese macaque colony at the University of Montréal. In 1984, a group of Japanese macaques was established there. This original group, derived from the Arashiyama West troop, was selected by Griffin and consisted of 15 individuals, namely an adult male and three matriline with similar age/sex compositions. In each matriline, the mother [renamed A, B or C] was born in 1971 or 1973 and had three immature daughters born in 1981, 1982, and 1983, and one son born in 1984. The A and C families were members of the same genealogy (Betta) but were distantly related through the great-grandmother of A and C. The B family belonged to another genealogy (Rotte). The A family dominated the B and C families, and the B family dominated the C family.

In 1991, the troop was moved from its urban location near the University of Montréal campus to a larger rural location outside St-Hyacinthe, Québec, which was owned by the University of Montréal. Between the time when the Montréal lab (Laboratory of Behavioural Primatology) opened in 1984 until the time the St-Hyacinthe lab closed in 1998, Bernard Chapais and his graduate students conducted a series of elegant behavioural experiments and observations on Japanese macaque dominance systems. This research resulted in 12 Master's theses and two PhD dissertations. Of these students, Carole Gauthier, Jean Prud'homme and Paul Vasey continued to conduct research on the Arashiyama macaques. Until 1998, Carole Gauthier served as Bernard Chapais' research assistant and Jean Prud'homme served as the lab manager until 1998. After graduating from the University of Montréal, Paul Vasey conducted post-doctoral research at Concordia University in Montréal (under the supervision of Dr James Pfaus) on the neuroanatomy of the Arashiyama macaques using archived brain tissue. After obtaining a faculty position in 2000 at the University of Lethbridge, Canada, he then shifted his behavioural research to the Arashiyama E troop.

In 1993, an outbreak of encephalitis occurred in the Montréal colony (Lair *et al.*, 1996). No major health problems had affected the colony since its establishment in 1984. Symptoms of the encephalitis included a variety of severe neurological deficits (e.g. paralysis, nystagmus, dyspnoea, dysphagia, etc.). Necropsied animals exhibited haemorrhagic cerebral infarcts with vasculitis. Mortality was virtually 100%. Despite intensive efforts to pinpoint the cause of the disease over a number of years, no definite cause was ever established. Owing to the significant level of health hazard involved, the acquisition of adequate veterinary services became highly problematic forcing the closure of the lab in 1998 in accordance with the regulations of the Canadian Council of Animal Care. The whole troop had to be euthanised.

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