

Tabela 2-37. Pilot Program to Conserve the Brazilian Rain Forest PPG-7 (In US\$ million or equivalent).

Projects	RFT*	Germany	European Commission	United Kingdom	USA	France	Counterpart Brazil	Total
Current projects								
Scientific institutions	9.00			0.70	3.00		2.98	15.68
Directed Research			10.91		9.00			19.91
Demonstrative Projects Type A	3.18	20.75	4.44			1.68	3.00	33.05
Extractivist Reserves	3.00		5.55				0.90	9.45
Natural Resources Policy	20.00	28.48	18.55	5.00			11.40	83.43
Indigenous lands	2.10	18.41					2.20	22.71
Subtotal – projects underway	37.28	67.64	39.45	5.70	12.00	1.68	20.48	184.23
Projects approved								
Management of Forest Resources- PROMANEJO	2.00	13.54		1.90			1.40	18.84
Environmental Education-CEDUC	2.25		5.55				0.80	8.60
Subtotal - projects approved	4.25	13.54	5.55	1.90	0.00	0.00	2.20	27.44
New projects for evaluation								
Analysis, Monitoring and Evaluation Management of Natural Resources of Várzeas	2.00						0.20	2.20
Monitoring and Control of Deforestation and Fires- PRODESQUE	2.00						0.90	2.90
Parks and Reserves	5.00	21.15	13.00	3.00			7.00	49.15
Not allocated		11.34						11.34
Subtotal - new projects (estimate)	11.00	37.03	13.00	3.00	0.00	0.00	8.80	72.83
Total	52.53	118.21	58.00	10.60	12.00	1.68	31.48	284.50

RFT = Rain Forest Trust Fund, a multilateral fund from a number of donors, administered by The World Bank.

Source: Brasil, MMA. *Projeto Parques e Reservas*. Brasília: Programa Piloto para a Proteção das Florestas Tropicais do Brasil - PPG-7 (1997). 3 v.

of computerised databases for collections. The National Zoological Programme (Programa Nacional de Zoologia) of CNPq recruits and trains personnel for the maintenance of research teams and of the collections themselves.

Of the zoology projects financed, 52% deal with vertebrates. Of these, 32% deal with fish, 25% mammals, 21% birds, 14% reptiles, and 7% amphibians. Research projects on invertebrates include insects (68%), crustaceans (32%), coelenterates (4.5%) and echinoderms (4.5%). A little over 10% of the research groups in zoology maintain scientific collections. The Tropical Database (BDT) has placed some information on these research groups and their collections on the Internet - 'Brazilian Zoological Collections' (Table 2-43).

There are a number of initiatives involving the establishment of computerised databases for zoological collections. One of these is the Neodat Project, for fishes, involving 30 institutions world-wide, five of which are Brazilian. The Emílio Goeldi Museum (Museu Paraense Emílio Goeldi - MPEG) in Pará is also computerising the catalogues and registers for its collection. The National Museum (Mu-

seu Nacional) in Rio de Janeiro is using two systems: MUSE for the ichthyological collection and SGC, for the remainder.

2.4.3 Botanical Gardens and Arboreta

Botanical Gardens, which maintain, introduce, and breed native and non-native plant species, have a fundamental role to play in both in situ and ex situ conservation, especially of rare and threatened species. They act as germplasm banks, maintaining as they do valuable genetic material in their live collections.

In the Convention on Biological Diversity the view is given that it is fundamental that botanical gardens be involved in carrying out or supporting conservation *in situ* especially in such areas as species, habitat and ecosystem management, forest regeneration, habitat restoration, and the conservation of rare or threatened species of the Brazilian flora, besides playing an essential role in genome preservation.

Botanical gardens should also be involved in floristic and phytosociological inventories for the conservation and

management of ecosystems and habitats and the identification of processes and activities that currently or potentially represent adverse impacts on biodiversity.

There are 36 registered botanical gardens in the country, all involved in species' conservation and environmental education (Table 2-44).

There is a Brazilian Network of Botanical Gardens (Rede Brasileira de Jardins Botânicos) and some of their principal needs were summarised during a meeting held during the 46th National Botanical Congress, in Friburgo, Rio de Janeiro, July 1996;

- Establishment of a permanent base that would give priority to the study of the most important biomes;
- The exchange of information via the Network;
- The organization and integration of ex situ conservation strategies for rare or threatened native species;
- More environmental education programmes.

There is as yet no broad survey of the situation of Brazilian arboreta, forests or woods planted for the cultivation of tree species, native or otherwise, for the purposes of preservation, production of seedlings and seeds, or as germplasm banks. Available information refers to collections associated with botanical gardens and/or research centres, beside the development of human resources.

2.4.4 Zoological Gardens

Ninety-one zoological gardens in Brazil are responsible for maintaining some 40,000 wild animals in captivity, the large majority of them species naturally occurring in Brazil (Table 2-45, Figure 2-35). These zoos also carry out zoological research and environmental education projects, frequently in partnership with national and international institutions.

Table 2-39. Status of Indigenous lands in Brazil*

Situation	Number	Area (ha)	% in relation to total area
Registered	256	53,784,522	63.91
Legally sanctioned	32	6,185,806	7.35
Demarcated	14	1,399,622	1.66
Delimited	67	20,323,005	24.15
Identified	13	2,460,147	2.92
Subtotal	382	84,153,102	100.00
To be identified	177	-	-
Total	559	168,306,204*	

* not including 177 areas to be identified.

Source: FUNAI (1997).

Table 2-38. Private Natural Heritage Reserves (RPPNs).

State	Number	Area (ha)
Amapá	1	46.75
Amazonas	5	104,222.96
Pará	1	2,000.00
Rondônia	1	623.24
Roraima	1	109.59
Tocantins	1	745.00
Total - North	10	107,747.54
Alagoas	3	180.50
Bahia	15	9,821.59
Ceará	3	3,124.33
Maranhão	5	1,054.04
Paraíba	4	5,580.65
Pernambuco	1	1,485.00
Piauí	1	27,458.00
Rio Grande do Norte	2	910.24
Total - North-east	34	49,614.35
Federal District	1	1.00
Goiás	15	13,306.60
Mato Grosso	6	82,040.79
Mato Grosso do Sul	9	49,533.35
Total Central-west	31	144,881.74
Minas Gerais	30	21,841.60
Rio de Janeiro	16	3,037.78
São Paulo	10	346.19
Total - South-east	56	25,225.57
Paraná	4	2,272.35
Rio Grande do Sul	9	3,175.68
Santa Catarina	6	8,140.11
Total - South	19	13,588.14
Total - Brazil	150	341,057.34

Source: IBAMA/DIREC (1998).

The Society of Brazilian Zoological Gardens (Sociedade dos Zoológicos do Brasil - SZB) is one of the two organizations representing zoos and animal collections in Brazil, the other being the Sao Paulo Society of Zoological Gardens (Sociedade Paulista de Zoológicos). The SBZ holds a Congress each year in which zoo staff and researchers present papers on veterinary medicine, ecology, and environmental education. It is also responsible for the committees that supervise and guide captive breeding efforts for some of the Brazilian threatened, such as the Maned

Table 2-40. Recognition of Indigenous Lands in Brazil.

Period	Declared		Legally sanctioned	
	Number	Area (ha)	Number	Area (ha)
01/90 to 09/92	58	25,794,711	112	26,405,219
10/92 to 12/94	39	7,241,711	16	5,432,437
01/95 to 11/97	34	12,613,036	68	15,631,897
TOTAL	131	45,649,010	196	47,469,553

Source: ISA. 1997. *Terras e Populações Indígenas* (1997) (Internal document).

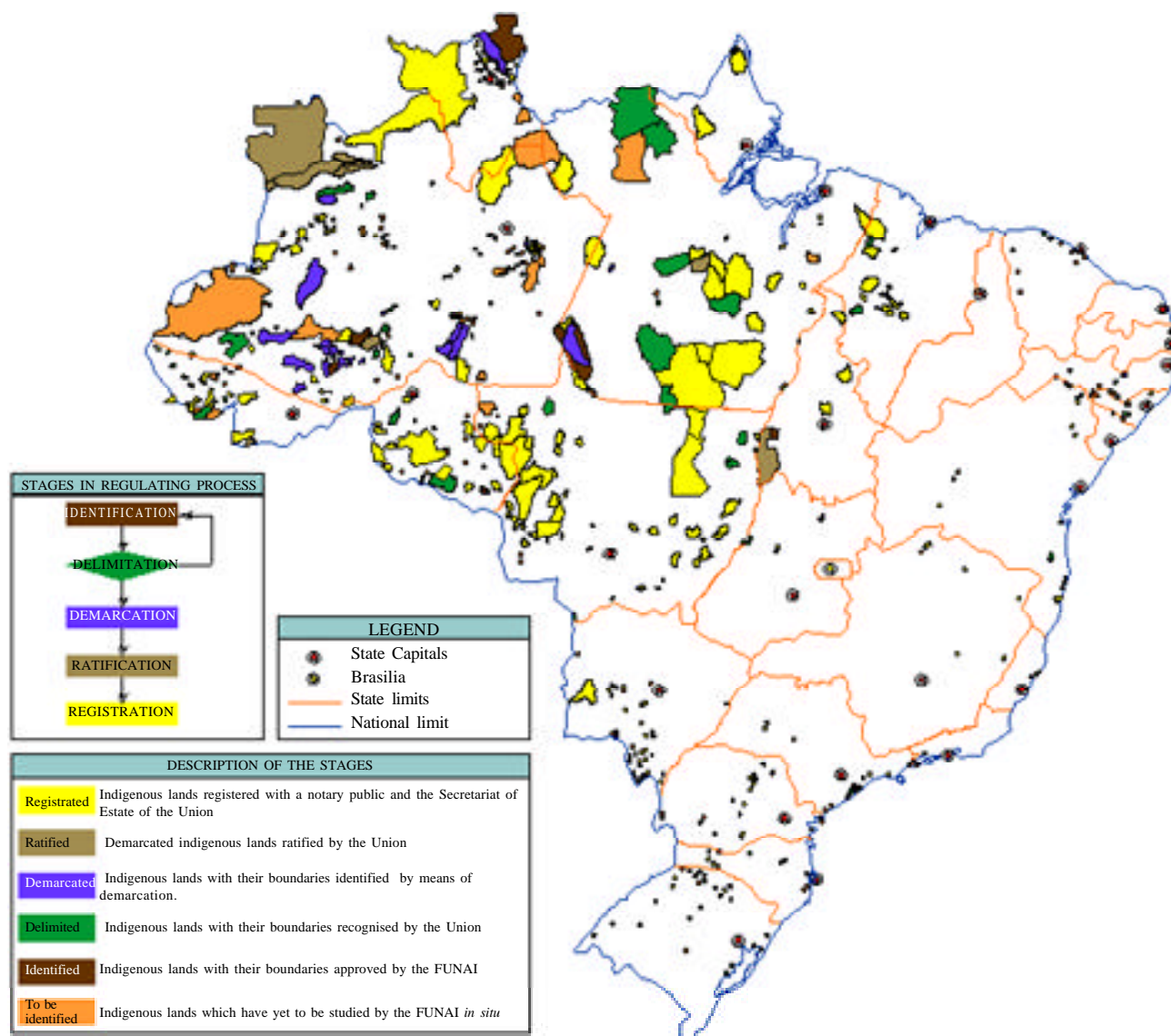


Figure 2.31 Status of Indigenous Lands in Brazil.

Source: Fundação Nacional do Índio (FUNAI). Brasil - Terras Indígenas. Map, scale 1:5,000,000. Brasília, 1997.

Wolf Management Committee. An annual census is carried out of all captive animals in order to formulate husbandry and breeding strategies and identify the species demanding specific efforts for their conservation in captivity. The information is compiled and made available on the Internet by the Tropical Database - BDT, Campinas, through the Web utility 'Census of Brazilian Zoological Gardens'. The census includes the scientific and common names, family, class and breeding stock, the latter expressed as the number of males, females, indeterminate and total (Table 2-46). There is also an indication of the status of the species: whether they are threatened in the wild, presumed threatened or insufficiently known, based on the 'Official List of Species of Brazilian Fauna Threatened with Extinction' of IBAMA (Edict No. 1.522, 19th December 1989; Edict No. 221/90, No 45-N, 27th April 1992; and Edict No. 062, 17th June 1997) (see Box 2-1).

The Tropical Database - BDT has also assisted the SZB in carrying out a survey of the Zoological Gardens to obtain information on their lines of research and environmental education projects. This is included in the 'Directory of Zoological Gardens in Brazil' (Diretório dos Zoológicos do Brasil), also available on the Internet.

2.4.5 Germplasm Banks

The National Centre for Research on Genetic Resources and Biotechnology (Centro Nacional de Pesquisa de Recursos Genéticos e Biotecnologia - CENARGEN) of EMBRAPA, was set up in 1974. It resulted in the establishment of a National Network for the Conservation of Genetic Resources (Rede Nacional de Conservação de Recursos Genéticos) to organise the collection, exchange, quarantine,

characterisation, evaluation, documentation and, above all, the conservation and use of germplasm.

The Network is comprised of EMBRAPA and its research units, universities, state research institutes and private enterprises. Germplasm banks - BaG have been set up in 27 sites, all operating in strict collaboration with CENARGEN. The base collection of plant germplasm (deep-frozen at -20°C) is maintained at CENARGEN and the active collections, together with perennial plant collections, are kept in the other germplasm banks (Table 2-47).

A recent survey of the Network listed about 200,000 records of plant germplasm being conserved throughout the country. Of these, about 76% are non-native and 24% are native species.

Studies carried out by the Financing Agency for Research and Projects (Financiadora de Pesquisas e Projetos - FINEP) have indicated the need for a number of measures to improve the system of germplasm conservation in the country:

- Restoration of important collections which are deteriorating;
- More space and improved safety measures;
- Maintenance and upgrading of equipment;
- Expansion and computerisation of the stocks;
- Training, recycling and improved career stability of researchers and support staff;
- Increase in bibliographic material and the upgrading of specialised libraries;
- Incentives for, and facilitation of, the exchange of material;
- Mechanisms for exchange of specialists and opportunities for training technicians within the country and abroad.

Together, these components aim to guarantee the conservation of the existing genetic resources in the ex situ collections, as well as in situ conservation in their regions of origin, together with the agricultural and indigenous communities.

Twelve animal germplasm banks maintain in vivo and in vitro specimens of animal populations for research, conservation and breeding, especially of domestic races threatened with extinction.

Currently, research is concentrated on the following races:

- Cattle: 'Mocho Nacional', 'Crioulo Lageano', 'Pantaneiro', 'Curraleiro' or 'Pé-Duro', 'Junqueira' and 'Caracu';

Table 2-41. Indigenous populations and societies

State	Population	% of total	Nº of societies
Acre	6,610		13
Amapá	6,612		6
Amazonas	89,529		52
Pará	15,715		28
Rondônia	5,573		28
Roraima	37,025		8
Tocantins	6,360		8
North	167,424	50.91	143
Alagoas	6,611		5
Bahia	8,561		10
Ceará	4,650		2
Maranhão	14,271		9
Paraíba	6,902		1
Pernambuco	19,950		7
Sergipe	230		2
North-east	61,175	18.60	36
Espírito Santo	1,347		1
Minas Gerais	6,200		3
Rio de Janeiro	271		1
São Paulo	1,774		3
South-east	9,592	2.92	8
Goiás	142		3
Mato Grosso	17,329		38
Mato Grosso do Sul	45,259		5
Central-west	62,730	19.07	46
Rio Grande do Sul	13,354		2
Santa Catarina	6,667		3
Paraná	7,921		2
South	27,942	8.50	7
TOTAL	328,863¹	100.00	215²

¹The number of isolated Indians has not been computed; the numbers of those who live on the outskirts of cities are computed for the following towns/cities: 2,300 in Amambaú/MS, 3,000 in Campo Grande/MS, 1,000 in Boa Vista/RR, 10,000 in Manaus/AM, 20 in Governador Valadares/MG, and approximately 100 in Curitiba/PR, totalling approximately 26,420 Indians.

² The total for this column is higher than the real figure, due to the fact that some societies live in more than one State of the Federation.

Source: FUNAI. Brasília (1997).

- Sheep: 'Crioulo Lanado', 'Santa Inês', 'Morada Nova', 'Sornalis Brasileiro';
- Goats: 'Moxotó', 'Marota', 'Canindé', 'Gurguéia', 'Repartida', 'Azul' and 'Graúna';
- Pigs: 'Moura', 'Caruncho', 'Pirapetinga', 'Piau', 'Canastra', 'Canastrinha', 'Canastrão', 'Tatu', 'Nilo' and 'Casco de Mula';
- Mules: 'Jumento Nordestino' and 'Jumento Brasileiro';

Table 2-42. Brazilian herbaria - 1997.

Acronym	Name	State	Phanerogams	Cryptogams	Total*	
South					840,586	
1	FUEL	Fundação Universidade Estadual de Londrina	PR	25,000	100	25,100
2	HUCP	Herbário da Pontifícia Universidade Católica do Paraná	PR	7,410	3,171	10,581
3	HUM	Herbário da Universidade Estadual de Maringá	PR	—	—	—
4	HFC	Herbário Fernando Cardoso	PR	3,856	x	3,856
5	PKDC	Herbário Per Karl Dusen	PR	—	—	—
6	MBM	Museu Botânico Municipal de Curitiba	PR	250,000	5,000	255,000
7	UPCB	Universidade Federal do Paraná	PR	—	—	—
8	CNPO	Centro de Pesquisas de Pecuária dos Campos do Sul Brasileiros	RS	—	—	—
9	HAS	Herbário Alarich Schultz	RS	90,000	18,300	108,300
10	HASU	Herbário Aloysio Sehnem – UNISINOS	RS	4,000	2,500	6,500
11	HERBARA	Herbário Balduino Rambo	RS	7,067	500	7,567
12	HUCS	Herbário da Universidade de Caxias do Sul	RS	—	—	—
13	RSPF	Herbário da Universidade de Passo Fundo	RS	5,372	369	5,741
14	HURG	Herbário da Universidade do Rio Grande	RS	4,256	227	4,483
15	PEL	Herbário do Departamento de Botânica	RS	17,910	1,260	19,170
16	HDCF	Herbário do Departamento de Ciências Florestais	RS	5,950	20	5,970
17	MPUC	Herbário do Museu de Ciências	RS	5,121	2,341	7,462
18	SMDB	Herbário Santa Maria	RS	5,938	218	6,156
19	URG	Herbário Uruguiana	RS	5,000	500	5,500
20	PACA	Herbarium Anchieta	RS	90,000	30,000	120,000
21	SFPA	Instituto de Pesquisas Agronômicas	RS	—	—	—
22	IPRN	Instituto de Pesquisas de Recursos Naturais Renováveis Ataliba Paz	RS	—	—	—
23	BLA	Laboratório Brasileiro de Agrostologia	RS	20,000	x	20,000
24	ICN	Universidade Federal do Rio Grande do Sul	RS	90,000	28,000	118,000
25	HBR	Herbário Barbosa Rodrigues	SC	70,000	5,000	75,000
26	FLOR	Herbário do Depto. de Botânica	SC	24,000	6,000	30,000
27	CRI	Herbário Pe. Dr. Raulino Reitz	SC	6,200	x	6,200
28	SRS	Herbarium Gilmar Pezzopane Plá	SC	—	—	—
South-East					1,769,607	
29	MBML	Museu de Biologia Mello Leitão	ES	—	—	—
30	CVRD	Reserva Florestal de Linhares	ES	5,800	x	5,800
31	VIES	Universidade Federal do Espírito Santo	ES	8,000	2,000	10,000
32	PAMG	Empresa de Pesquisa Agropecuária de Minas Gerais – EPAMIG	MG	47,000	750	47,750
33	GFJP	Herbário “Guido Pabst”	MG	—	—	—
34	BHCB	Herbário da Universidade Federal de Minas Gerais	MG	38,662	4,000	42,662
35	VIC	Herbário de Viçosa	MG	15,486	829	16,315
36	CESJ	Herbário do Centro de Ensino Superior	MG	20,000	10,000	30,000
37	BHMH	Herbário do Museu de História Natural	MG	4,000	x	4,000
38	HXBH	Herbário e Xiloteca – CETEC/SAT	MG	11,500	1,500	13,000
39	OUPR	Herbário José Badini	MG	35,000	916	35,916
40	UCBH	Pontifícia Universidade Católica	MG	—	—	—
41	ESAL	Universidade Federal de Lavras	MG	14,700	300	15,000
42	HUFU	Universidade Federal de Uberlândia	MG	15,000	200	15,200
43	GUA	Herbário Alberto Castellanos	RJ	40,000	5,000	45,000
44	RUSU	Herbário da Universidade Santa Úrsula	RJ	7,136	843	7,979
45	R	Herbário do Museu Nacional do Rio de Janeiro	RJ	345,000	30,000	375,000
46	TER	Herbário do Parque Nacional da Serra dos Órgãos	RJ	—	—	—
47	HPNI	Herbário PARNA/ITA	RJ	—	—	—
48	HB	Herbarium Bradeanum	RJ	71,572	6,734	78,306
49	FCAB	Herbarium Friburguense Colégio Anchieta	RJ	—	—	—
50	RBE	Jardim Botânico da Universidade Federal Rural do Rio de Janeiro	RJ	2,225	x	2,225
51	RB	Jardim Botânico do Rio de Janeiro	RJ	313,212	31,600	344,812
52	RFA	Universidade Federal do Rio de Janeiro	RJ	—	—	—
53	RBR	Universidade Federal Rural do Rio de Janeiro	RJ	—	—	—
54	ESA	Escola Superior de Agricultura Luiz de Queiroz	SP	—	—	—

Table 2-42 (contd). Brazilian Herbaria - 1997

Acronym	Name	State	Phanerogams	Cryptogams	Total*	
55	UNBA	Herbário da UNESP de Bauru	SP	1,500	200	1,700
56	BAUR	Herbário da Universidade Sagrado Coração	SP	3,103	x	3,103
57	HISA	Herbário de Ilha Solteira	SP	6,700	200	6,900
58	SPFR	Herbário do Departamento de Biologia – FFCL – USP	SP	6,600	250	6,850
59	SPSF	Herbário Don Bento Pickel	SP	21,100	480	21,580
60	SP	Herbário Maria Eneyda P, K, Fidalgo	SP	230,000	87,000	317,000
61	IACM	Herbário Micológico	SP	x	8,240	8,240
62	PMSP	Herbário Municipal de São Paulo	SP	4,117	41	4,158
63	HRCB	Herbarium Rioclarense	SP	26,200	350	26,550
64	IAC	Instituto Agronômico de Campinas	SP	34,600	134	34,734
65	IBI	Instituto Biológico	SP	—	—	—
66	SPF	Universidade de São Paulo	SP	124,327	18,500	142,827
67	UEC	Universidade Estadual de Campinas	SP	91,000	x	91,000
68	BOTU	Universidade Estadual Paulista Júlio de Mesquita Filho	SP	—	—	—
69	SJRP	Universidade Estadual Paulista Júlio de Mesquita Filho	SP	7,500	8,500	16,000
North-East					403,233	
70	ALCB	Herbário Alexandre Leal Costa	BA	—	—	—
71	BAH	Herbário Antônio Nonato Marques	BA	13,000	x	13,000
72	CEPEC	Herbário do Centro de Pesquisas do Cacau	BA	75,000	2,000	77,000
73	HRB	Herbário RADAM-BRASIL	BA	37,004	796	37,800
74	HUEFS	Universidade Estadual de Feira de Santana	BA	29,292	417	29,709
75	IAL	Centro Nacional de Pesquisa da Mandioca e Fruticultura – EMBRAPA	BA	—	—	—
76	MAC	Herbário do Instituto de Meio Ambiente	AL	13,000	674	13,674
77	MUFAL	Herbário Honório Monteiro	AL	2,494	64	2,558
78	URCA	Herbário Caririense Dárdano de Andrade Lima	CE	343	54	397
79	FORTM	Herbário Micológico e Fitológico	CE	—	—	—
80	EAC	Herbário Prisco Bezerra	CE	—	—	—
81	UVA	Herbário UVA/CNPq/EMBRAPA	CE	—	—	—
82	EAN	Herbário Jayme Coelho de Moraes	PB	—	—	—
83	JPB	Herbário Lauro Pires Xavier	PB	18,000	5,000	23,000
84	HTSA	Centro de Pesquisa Agropecuária Trópico Semi-árido/EMBRAPA	PE	2,500	x	2,500
85	IPA	Herbário Dárdano de Andrade Lima	PE	57,100	x	57,100
86	HST	Herbário Sérgio Tavares	PE	6,800	x	6,800
87	PEUFR	Herbário Vasconcelos Sobrinho	PE	18,000	4,200	22,200
88	UFP	Universidade Federal de Pernambuco	PE	14,908	5,000	19,908
89	URM	Universidade Federal de Pernambuco	PE	x	75,830	75,830
90	TEPB	Herbário Gabriel Barroso	PI	9,500	430	9,930
91	EFC	Escola de Florestas	PR	—	—	—
92	MOSS	Herbário Dárdano de Andrade Lima	RN	4,454	52	4,506
93	UFMA	Herbário Atico Seabra	MA	—	—	—
94	NATAL	Herbário Parque das Dunas	RN	736	15	751
95	HUNP	Universidade Potiguar	RN	—	—	—
96	ASE	Herbário da Universidade Federal de Sergipe	SE	6,482	88	6,570
North					548,692	
97	FUNTAC	Fundação de Tecnologia do Estado do Acre	AC	—	—	—
98	HPZ	Herbário do Acre	AC	7,000	822	7,822
99	HAMAB	Herbário Amapaense	AP	8,000	x	8,000
100	HITAM	Instituto de Tecnologia da Amazônia	AM	—	—	—
101	HUAM	Herbário da Universidade do Amazonas	AM	6,006	86	6,092
102	INPA	Instituto Nacional de Pesquisas da Amazônia	AM	200,000	x	200,000
103	IAN	Herbário da EMBRAPA Amazônia Oriental	PA	144,000	20,000	164,000
104	MG	Museu Paraense Emílio Goeldi	PA	150,000	9,778	159,778
105	HF	Universidade Federal do Pará	PA	3,000	x	3,000
Central-West					317,489	
106	CEN	Centro Nacional de Pesquisa de Recursos Genéticos e Biotecnologia – CENARGEN	DF	27,868	93	27,961
107	IBGE	Herbário da Reserva Ecológica do IBGE	DF	32,200	x	32,200
108	UB	Herbário do Departamento de Botânica - UnB	DF	200,000	8,000	208,000

Table 2-42 (contd). Brazilian Herbaria - 1997

	Acronym	Name	State	Phanerogams	Cryptogams	Total*
109	HEPH	Herbário Ezechias Paulo Heringer	DF	13,100	213	13,313
110	UFG	Universidade Federal de Goiás	GO	18,278	3,723	22,001
111	CPAP	Centro de Pesquisas Agropecuárias do Pantanal – EMBRAPA	MS	—	—	—
112	CGMS	Fundação Universidade Federal do Mato Grosso do Sul	MS	—	—	—
113	CEUL	Herbário do Centro Universitário de Três Lagoas	MS	—	—	—
114	COR	Universidade Federal do Mato Grosso do Sul	MS	—	—	—
115	UFMT	Herbário Central	MT	12,818	1,196	14,014
		General Total				3,879,607

*Partial totals. State, see Figure 1-1. n.a. data not available.

Source: Peixoto & Barbosa (1998).

- Horses: ‘Lavradeiro’, ‘Pantaneiro’, ‘Nordestino’, ‘Marajoara’ and ‘Campeiro’.

Besides the Animal Germplasm Bank maintained by CENARGEN in Brasília and the Rio Grande do Norte Agricultural and Cattle-Breeding Research Company (Empresa de Pesquisas Agropecuárias do Rio Grande do Norte - EMPARN), there are seven other germplasm banks maintained by EMBRAPA for domestic races of buffalo, cattle, mules, horses, goats, and sheep:

- Buffalo Germplasm Bank, Pará – *Bubalus bubalis*;
- ‘Pé-Duro’ Cattle Germplasm Bank, Piauí – *Bos taurus*;
- ‘Pantaneiro’ Cattle Germplasm Bank Mato Grosso do Sul – *Bos taurus*;
- ‘Nordestino’ Mule Germplasm Bank, Rio Grande do Norte – *Equus asinus*;
- ‘Lavradeiro’ Horse Germplasm Bank, Rorãima – *Equus caballus*;
- ‘Pantaneiro’ Horse Germplasm Bank, Mato Grosso do Sul – *Equus caballus*;

- Goat Breeds of the Northeast Germplasm Bank, Ceará – *Capra hircus*;
- ‘Marota’ Goat Germplasm Bank, Piauí – *Capra hircus*;
- ‘Crioula Lanada’ Sheep Germplasm Bank, Rio Grande do Sul – *Ovis aries*;
- Parasitic Wasp Germplasm Bank, CENARGEN, Federal District - *Trichorhama* spp..

Regarding wild animals, conservation work in situ and the appraisal of the effects of habitat fragmentation on genetic variability is concentrated on three species: capybara (*Hydrochaeris hydrochaeris*), paca (*Agouti paca*) and maned wolf (*Chrysocyon brachyurus*).

2.4.6 Micro-organism Culture Collections

Most of the collections of micro-organism cultures in Brazil come from the isolated efforts of researchers, without any institutional support. Use of these cultures is restricted to the interests of the researcher, access is limited, and they do not meet the demand for authenticated cultures available to the public.

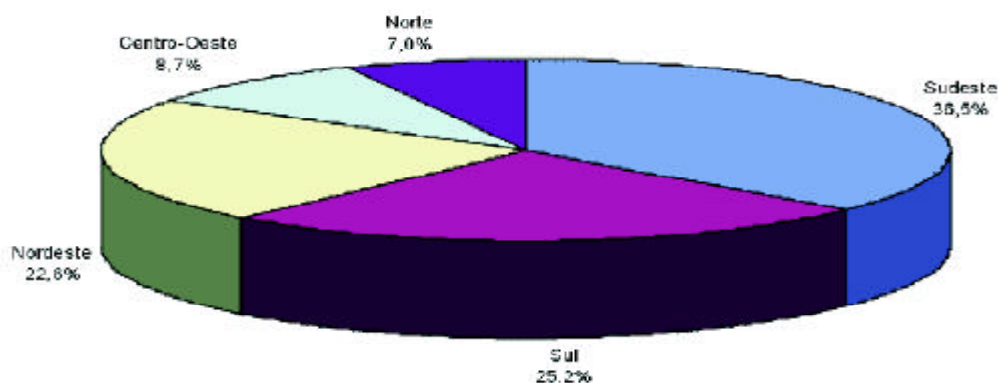


Figure 2-32. Distribution of herbaria in Brazil.
Source: Peixoto & Barbosa (1998).