

Papéis Avulsos de Zoologia

MUSEU DE ZOOLOGIA DA UNIVERSIDADE DE SÃO PAULO

ISSN 0031-1049

PAPÉIS AVULSOS ZOOL., S. PAULO 39(13): 249-270

29.IV.1996

RECORDS AND GEOGRAPHICAL DISTRIBUTION OF THE PEREGRINE FALCON *FALCO PEREGRINUS* TUNSTALL, 1771 (AVES, FALCONIDAE) IN BRAZIL

ROBSON SILVA E SILVA

ABSTRACT

A revision of the known Brazilian records of Peregrine Falcon is made, including previously unreported ones. Peregrines are spring-summer (September-April) visitors recorded mainly from urban and agricultural areas, with records from 117 localities distributed over 18 states. All falcons identifiable to subspecies wintering in Brazil belong to the forms tundrius and anatum, but there is overlap of wintering ranges.

INTRODUCTION

The Peregrine Falcon *Falco peregrinus* is a cosmopolitan species with 19 known subspecies (White & Boyce Jr., 1988). Peregrines have been recorded from every country in South America (Risebrough *et al.*, 1990), with three known subspecies: *F. p. anatum* migrating from North America (Alaska) to southern South America, *F. p. tundrius* from the higher latitudes of North America (including Greenland) migrating to southern South America (White, 1968; Ambrose & Riddle, 1988) and *F. p. cassini*, breeding in southern South America and migrating north during the austral winter (Vasina, 1975).

In North America, both *F. p. tundrius* and *F. p. anatum* had their populations drastically reduced by prey contamination by organochlorines like DDT, but nowadays the species is recovering (Kiff, 1988) and *F. p. tundrius* has been recently excluded from the list of endangered and threatened species.

Rua São José, 48 apt.31, Santos, SP, 11040-200, Brazil.

Trahalho recebido para publicação em 02.XII.1994 e aceito em 28.VIII.1995.

The presence of *Falco peregrinus* in Brazil was recorded by Sick (1960,1989), Albuquerque (1978, 1984) and Risebrough *et al.* (1990). *F. p. tundrius* and *F. p. anatum* have been considered usual visitors recorded from October to April, the boreal winter (Sick, 1989). Some birds spend the period in Brazil, but others continue their migration further south to neighboring countries.

There are few published information on the localities where the falcon has been recorded in Brazil, its seasonality and ecological settings. In this paper I fill this gap, making a revision of all known records of the species, including previously unpublished ones, and defining the seasonality and distribution of the Peregrine Falcon in Brazil.

MATERIAL AND METHODS

Peregrine Falcon records were based in specimens housed in museums and private collections, on birds banded in the USA, Canada (Bird Banding Laboratory) and Greenland (Zoologisk Museum) recovered in Brazil, on field observations made by the author and other researchers, and on the available literature.

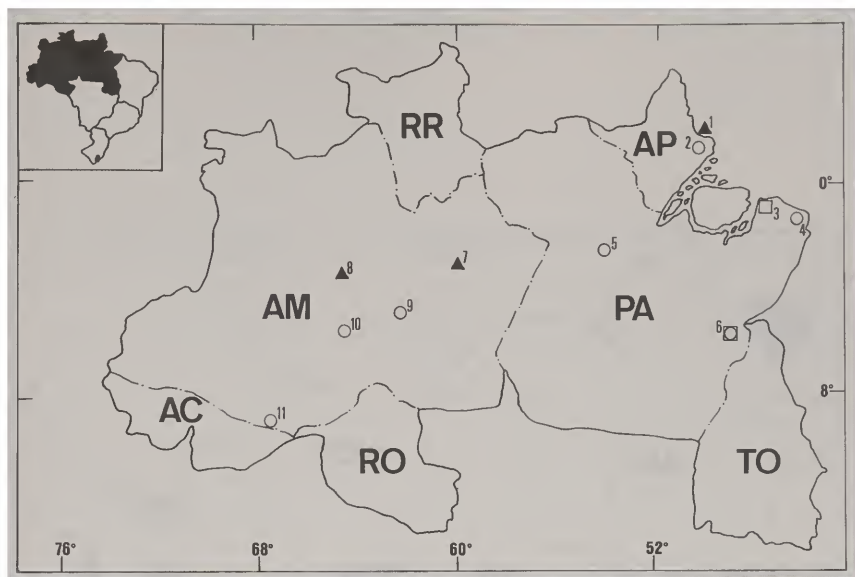
Geographical coordinates are from the U. S. Board on Geographical Names (1963) and Paynter Jr. & Traylor Jr. (1991).

RESULTS AND DISCUSSION

All records are listed in Appendix 1, with a summary of the relevant and available information of each one, and plotted in the maps 1 to 5. From 1967 to 1994, 45 peregrines banded in the USA (33 individuals), Canada (9) and Greenland (3) have been recovered in Brazil, mostly after the birds were killed. Incorrect provenances have been discovered in the records by Sick 1989, 1993 when checked against the Bird Banding Laboratory (U. S. Fish and Wildlife Service) database.

The first documented record of Peregrine Falcon in Brazil was made in March 1835 by Johann Natterer, who collected two individuals at Praia de Cajutuba, Pará state. These birds are in the Naturhistorisches Museum of Wien (Pelzeln, 1868-1870).

Peregrine Falcons have been recorded from 18 Brazilian states: Amapá, Pará, Amazonas, Maranhão (based on Oren, 1991), Piauí, Rio Grande do Norte, Paraíba, Pernambuco, Alagoas, Sergipe, Bahia, Mato Grosso, Minas Gerais, Rio de Janeiro, São Paulo, Paraná, Santa Catarina and Rio Grande do Sul. It is likely falcons will be recorded from other states. Peregrines seem absent from

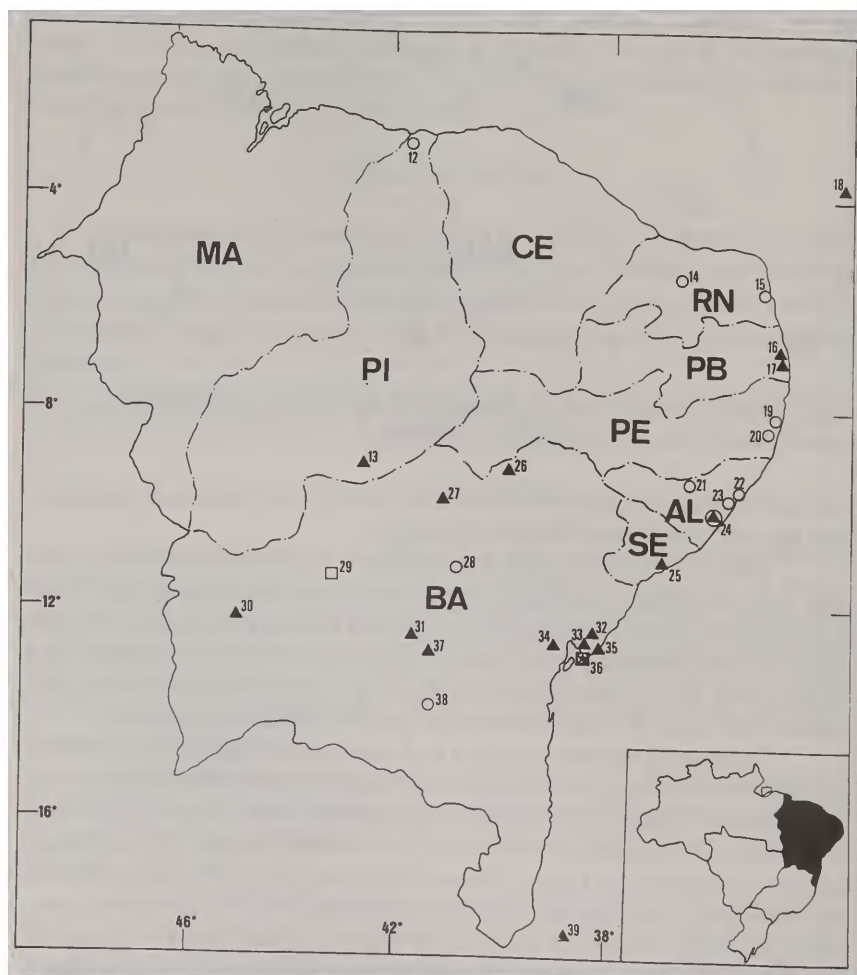


Map 1. Distribution of *Falco peregrinus* records in Northern Brazil. Museum or collection specimen (square), band recovery (circle) and sight record (triangle).

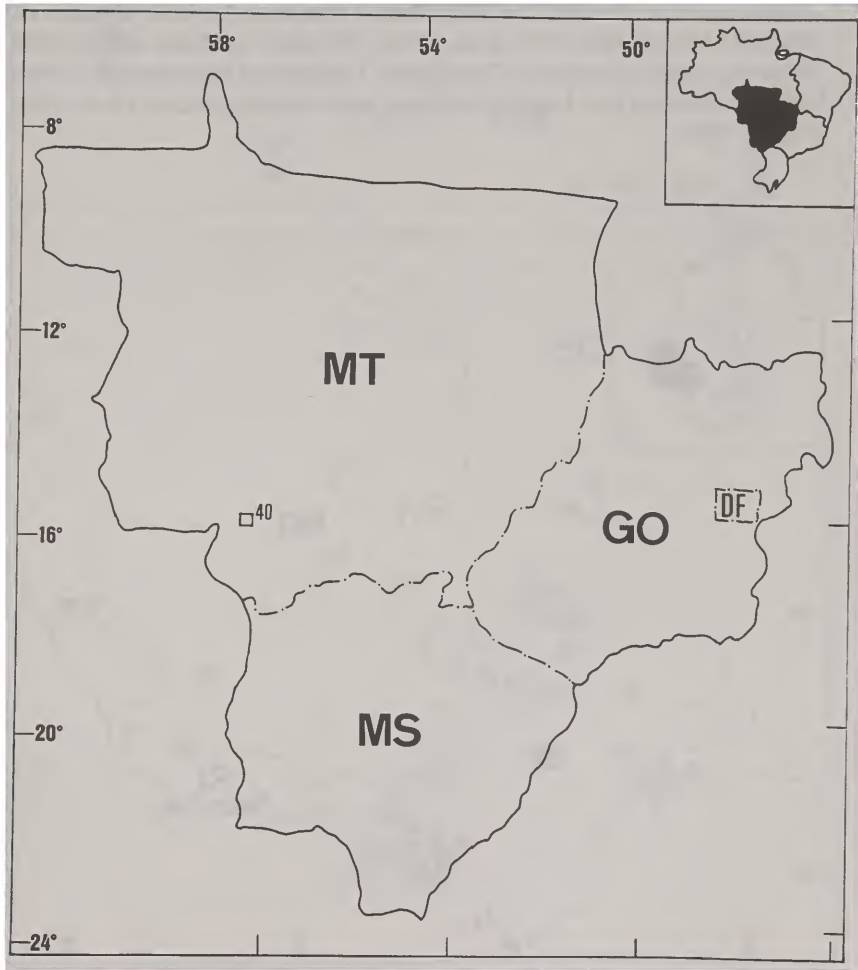
most of the Brazilian Shield, as the lack of records from Goiás and Tocantins, and the sole record from Mato Grosso suggest.

Most (66%) records come from southern and southeastern Brazil. This may be due to a greater coverage by researchers than to an actual greater abundance of falcons there, but it is also possible that there is a narrowing of migration corridors in those regions, meaning a greater concentration of falcons in a smaller area. South and southeastern Brazil are also mostly covered by agricultural and urban habitats, where most records of falcons come from.

The species has been recorded in Brazil mostly from September, when the birds start arriving, to April, when they depart. Records of falcons occurring year-round in cities (J. Pacheco and J. Albuquerque, pers. com.) suggest some birds may fail to migrate north during the breeding season, a phenomenon already recorded for the Osprey *Pandion haliaetus* (Sick, 1993; pers. obs.). On the other hand, such records may refer to the form *F. p. cassini*, never positively recorded from Brazil but found in Uruguay (Escalante, 1961) and Bolivia (Cabot, 1986). According to McNutt *et al.* (1988), *F. p. cassini* has a larger distribution and populations than thought, and it may well occur in southern Brazil.



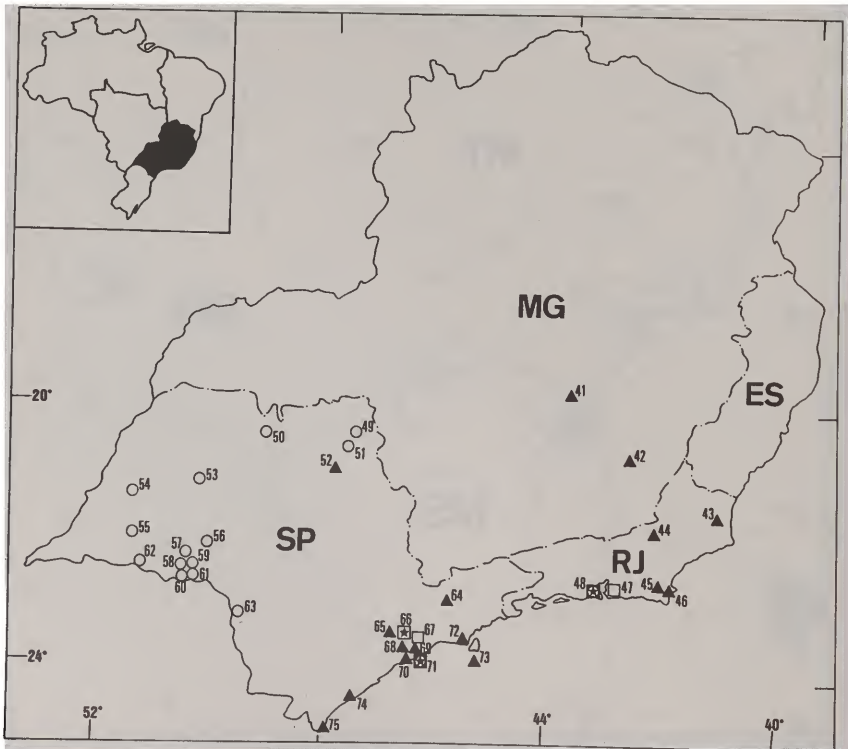
Map 2. Distribution of *Falco peregrinus* records in Northeastern Brazil. Wintering area (star), museum or collection specimen (square), band recovery (circle) and sight record (triangle).



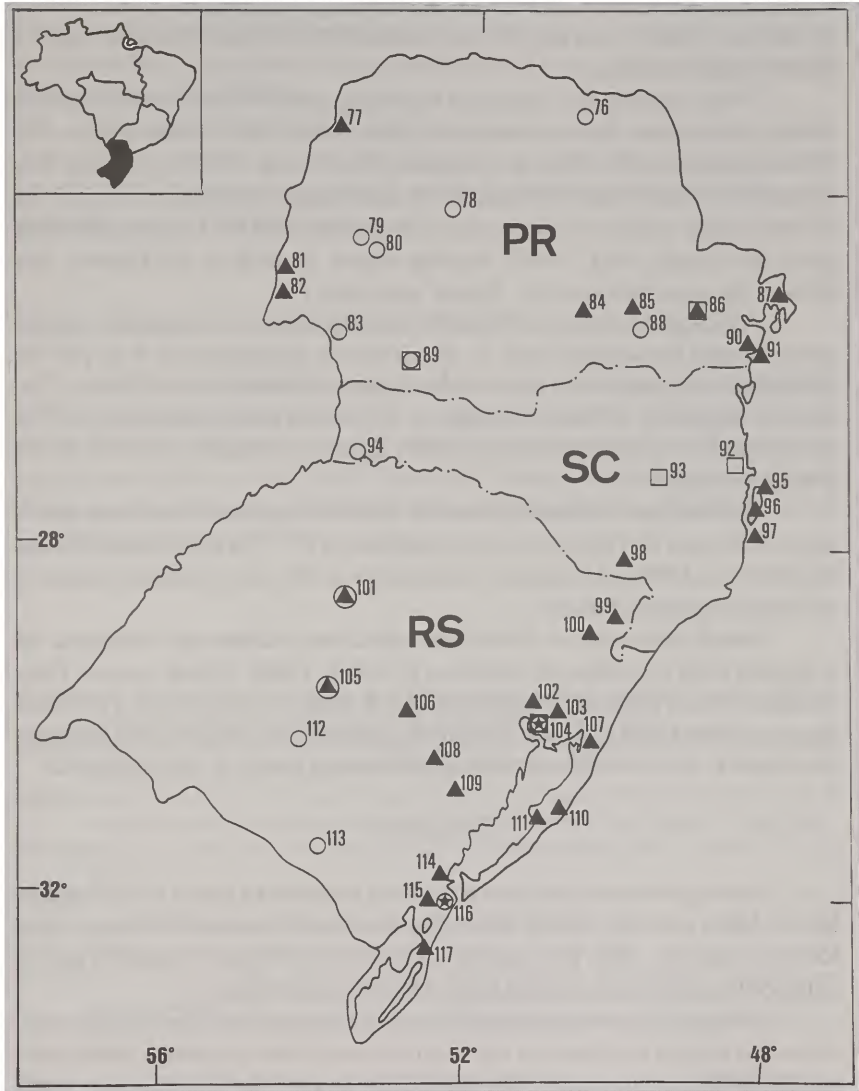
Map 3. Distribution of *Falco peregrinus* records in West-Central Brazil. Museum or collection specimen (square).

Migrating falcons concentrate at some points along their migratory routes following the eastern coast of the USA, allowing individuals to be censused and banded. Such points are unreported from Brazil, and the birds seem to disperse over an wider area.

Birds from North America fly south through Central America and the Caribbean, reaching northern South America. Some birds fly along the Pacific coast or the Andes reaching Argentina and Chile, while others follow the Atlantic coast to Uruguay and Argentina. There is also a route through the Amazon (Albuquerque, 1978; Sick, 1983). The same routes are used by other migrants, mainly shorebirds (Charadriidae, Laridae and Scolopacidae). These birds are the usual prey both for migrating and wintering falcons (Sick, 1993; Witeck, 1988).



Map 4. Distribution of *Falco peregrinus* records in Southern Brazil. Wintering area (star), museum or collection specimen (square), band recovery (circle) and sight record (triangle).



Map 5. Distribution of *Falco peregrinus* records in Southern Brazil. Wintering area (star), museum or collection specimen (square), band recovery (circle) and sight record (triangle).

Wintering Peregrine Falcons seem remarkably able to use both urban and agricultural habitats (sugarcane and soybean plantations), where increased populations of domestic pigeons *Columba livia* and doves *Zenaida auriculata* represent an attractive resource, and the buildings resemble the cliffs favored by falcons. In fact, cities may be more attractive to falcons than some natural habitats used by them.

There are only six confirmed wintering areas for *Falco peregrinus* in Brazil, all in cities: Rio de Janeiro, RJ (Sick, 1960, 1989), Porto Alegre, RS (Albuquerque, 1978, 1984), Rio Grande, RS (Witeck, 1988), Salvador, BA (Lima, 1991), São Paulo, SP (Sick, 1993) and Santos, SP (Silva e Silva, 1993). A bird banded in Rio de Janeiro used the same territory for 12 years, showing great site fidelity (Sick, 1993). Another falcon, banded in Rio Grande, has showed the same behavior (A. Witeck, pers. com.).

Although it is difficult to identify wintering falcons to subspecies, banded and collected individuals (only 11 specimens in museums and 4 in private collections) attributable to *tundrius* have been recorded all over Brazil. The *anatum* migrating to Brazil belongs to the northernmost population of the form, found in Alaska (USA) and Yukon Territory (Canada), where it intergrades with *tundrius*.

The fact that mensural characters and color patterns in museum specimens of *anatum* and *tundrius* can be confused in 20-35% of the cases (White & Boyce Jr., 1988) adds another complicator to the correct identification of wintering Peregrine Falcons.

Bands recoveries in South America do not indicate any difference in wintering areas by subspecies (Ambrose & Riddle, 1988). Typical *anatum*, from southern areas is generally resident (Herbert & Herbert, 1965; White, 1968) and has never been found in Brazil. Peregrines (*tundrius* and *anatum*) from northern areas tend to move over the resident populations to winter in South America.

CONCLUSIONS

Falco peregrinus has been commonly recorded in Brazil from September to April, and the records show that its area of occurrence is larger than formerly thought. With the ongoing increase of the falcon population due to conservation programs, records tend to become commoner.

Wintering areas are repeatedly used by the same individuals every year. Although located in urban and agricultural areas, there are always other alternative habitats nearby where the falcons can forage, like sand beaches, mangroves, rivers and lagoons. It is interesting to notice that Peregrine Falcons do well in human-made habitats and are possibly on the way to become commensals, at least in their winter grounds.

Falcons migrating to Brazil are referable to *F. p. tundrius* and *F. p. anatum*, the latter coming from a population that intergrades with *tundrius*, as indicated from banding and collecting data. The South American form, *F. p. cassini*, has not been found in Brazil yet, but its presence is probably due to year-round records of the species in southern Brazil. An alternative, or complementary, explanation is that some birds fail to migrate to North America during the southern winter.

The species ecology and distribution in its wintering grounds are becoming better known, but wintering areas in natural habitats, and more data are necessary to define migration routes and wintering ranges by subspecies, especially in the Brazilian hinterland.

ACKNOWLEDGEMENTS

I wish to thank all fellow researchers who kindly gave me information on falcon records both in the field, museums and collections. Danny Bystrack (Bird Banding Laboratory, Laurel, Maryland) sent me the available data on peregrines banded in the United States and Canada and recovered in Brazil. Thanks to the Universidade Santa Cecília dos Bandeirantes for the financial support to the work.

REFERENCES

- Albuquerque, J.L.B. 1978. Contribuição ao conhecimento de *Falco peregrinus* Tunstall, 1771 na América do Sul (Falconidae, Aves). *Rev. brasil. Biol.* 38(3): 727-737.
- Albuquerque, J.L.B. 1982. Observations on the use of rangle by the Peregrine Falcon (*Falco peregrinus tundrius*) wintering in southern Brasil. *Raptor Res.* 16: 91-92.
- Albuquerque, J.L.B. 1984. The Peregrine Falcon (*Falco peregrinus*) in southern Brazil: aspects of winter ecology in an urban environment. M.Sc. thesis, Provo, Utah, Brigham Young Univ.
- Albuquerque, J.L.B. 1985. Notes on distribution of some brazilian raptors. *Bull. Brit. Orn. Cl.* 105(3): 82-84.
- Alves, V.S., A. B. A. Soares, A. B. B. Ribeiro, M. A. Efe & G. S. Couto. 1992. Aspectos da avifauna do Parque Nacional Marinho dos Abrolhos, Bahia, Brasil. in Resumos do II Congresso Brasileiro de Ornitologia, Campo Grande, 1992.
- Ambrose, R. E. & K.E. Riddle. 1988. Population dispersal, turnover, and migration of Alaska peregrines. pages 677-684 in *Peregrine Falcon populations: their management and recovery*. Edited by T.J. Cade, J.H. Enderson, C.G. Thelander & C.M. White. The Peregrine Fund, Inc., Boise, Idaho.
- Anjos, L. & C. Seger. 1988. Análise da distribuição das aves em um trecho do rio Paraná, divisa entre os estados do Paraná e Mato Grosso do Sul. *Arq. Biol. Tecnol.* 31(4): 603-612.
- Antas, P.T.Z., A. Fillippini & S.M. de Azevedo Jr. 1988. Anilhamento de aves oceânicas e/ou migratórias no Arquipélago de Fernando de Noronha em 1987 e 1988. An. IV Enc.Nac. Anilhadores de

- Aves, Recife, 1988.
- Belton, W. 1984. Birds of Rio Grande do Sul, Brazil. Part I. Rheidae through Furnariidae. *Bull. Amer. Mus. Nat. Hist.* 178(4): 371-631.
- Cabot, J. 1986. *Falco peregrinus cassini* en Bolivia. Doñana, *Acta Vertebrata* 13: 183-186.
- Coelho, E.P., M. Soneghet & V.S. Alves. 1987. Segunda recaptura de um exemplar de *Falco peregrinus* no campus da Universidade Federal do Rio de Janeiro. An.II Enc.Nac. Anilhadores de Aves, Rio de Janeiro, 1986, 190-191.
- Escalante, R. 1961. Occurrence of Cassin race of Peregrine Falcon in Uruguay. *Condor* 63: 180.
- Herbert, R.A. & K.G.S. Herbert. 1965. Behavior of peregrine falcons in the New York city region. *Auk* 82: 62-94.
- Kiff, L.F. 1988. Changes in the status of the Peregrine Falcon in North America: an overview. pages 123-139 in *Peregrine Falcon populations: their management and recovery*. Edited by T.J. Cade, J.H. Enderson, C.G. Thelander & C.M. White. The Peregrine Fund, Inc., Boise, Idaho.
- Lima, P.C. 1991. Comportamento do *Falco peregrinus* na Bahia. in *Resumos do XVIII Congresso Brasileiro de Zoologia*, Salvador, 1991. 380.
- McNutt, J.W., D. H. Ellis, C. P. Garat, T. B. Roundy, W. G. Vasina & C. M. White. 1988. Distribution and status of the Peregrine Falcon in South America. pages 237-249 in *Peregrine Falcon populations: their management and recovery*. Edited by T.J. Cade, J.H. Enderson, C.G. Thelander & C.M. White. The Peregrine Fund, Inc., Boise, Idaho.
- Ménégaux, A., 1917. Étude d' une collection d' oiseaux du Mato Grosso. *Revue Française d'Ornithologie* 5.
- Moraes, V.S. & R. Krul 1993. Alguns resultados de expedições a ilhas do litoral do Paraná. In *Resumos do III Congresso Brasileiro de Ornitologia*, Pelotas, 1993.
- Müller, P. 1966. Studien zur wirbeltierfauna der insel von São Sebastião (23°50'S, 45°20'W). Inaugural-Dissertation zur Erlangung des akademischen Grades eines Doktors der Naturwissenschaften der Mathematisch-Naturwissenschaftlichen Fakultät der Universität des Saarlandes.
- Oren, D.C. 1991. As aves do estado do Maranhão, Brasil. *Goeldiana, Zool.* 9: 55p.
- Pacheco, J.F. 1992. Visitantes setentrionais no nordeste de São Paulo e sul de Minas Gerais. In *Resumos do II Congresso Brasileiro de Ornitologia*, Campo Grande, 1992.
- Paynter Jr, R.A. & M.A. Traylor Jr. 1991. Ornithological gazetteer of Brazil. viii + 789pp. (2vols.). Harvard College Press.
- Pelzeln, A.v. 1868-1870. Zur Ornithologie Brasiliens. Resultate von Johann Natterers Reisen in den Jahren 1817 bis 1835. Wien: A.Pichler's Witwe & Sohn. Iix + 462pp.
- Pinto, O.M.O. 1978. Novo catálogo das aves do Brasil I. Empresa Gráfica da Revista dos Tribunais.
- Risebrough, R.W., A.M. Springer, S.A. Temple, C.M. White, J.L.B. Albuquerque, P.H. Bloom, R.W. Fyfe, M.N. Kirven, B.A. Luscombe, D.G. Roseneau, M. Sander, N.J. Schmitt, C.G. Thelander, W.G. Vasina & W. Walker II, 1990. Observaciones del Halcon Peregrino, *Falco peregrinus* subsp. en America del Sur. *Rev. Brasil. Bio.* 50(3): 563-574.
- Sick, H. 1960. Notas sobre *Falco peregrinus anatum* Bonaparte no Brasil. *Publ. Avuls.* 34 Museu Nacional, Rio de Janeiro.
- Sick, H. 1983. Migrações de aves na América do Sul continental. *Publ. Téc.* n°2, CEMAVE, 86pp.
- Sick, H., 1989. Der kanadische wanderfalke, *Falco peregrinus tundrius* in Brasilien. *Mitt. Zool. Mus. Berl.* 65, Suppl.: *Ann. Orn.* 13: 27-36.
- Sick, H. 1993. *Birds in Brazil: a natural history*. Princeton University Press, 932pp.
- Silva e Silva, R. 1993. Estudo preliminar de *Falco peregrinus* (Falconiformes: Falconidae) em área de internada na cidade de Santos/SP. In *Resumos do III Congresso Brasileiro de Ornitologia*, Pelotas, 1993.
- Teixeira, D.M., J.B. Nacinovic & F.B. Pontual, F.B. 1987. Notes on some birds of northeastern Brazil (2). *Bull. Brit. Orn. Cl.* 107(4): 151-157.

- United States Board on Geographical Names. 1963. NIS Gazetteer of Brazil. v + 917pp.
- Vasina, W.G. 1975. Algunas consideraciones sobre *Falco peregrinus* en nuestro país. *El Hornero* 11: 281-284.
- White, C.M. 1968. Diagnosis and relationships of North American tundra-inhabiting Peregrine Falcons. *Auk* 85: 179-191.
- White, C.M. & D.A. Boyce Jr. 1988. An overview of Peregrine Falcon subspecies. pages 789-810 in *Peregrine Falcon populations: their management and recovery*. Edited by T.J.Cade, J.H.Enderson, C.G.Thelander and C.M.White. The Peregrine Fund, Inc., Boise, Idaho.
- Witeck, A.J. 1988. Dados preliminares sobre *Falco peregrinus* na cidade de Rio Grande/RS. An.III Enc.Nac. Anilhadores de Aves, São Leopoldo, 1988, 117-119.

APPENDIX 1. Records of *Falco peregrinus* in Brazil (numbers within parantheses refer to the maps 1 to 5 and the abbreviations to the information source).

Abbreviations:

Museums, institutions and collections;

BBL	Bird Banding Laboratory, Laurel
CEMAVE	Centro de Pesquisas para Conservação das Aves Silvestres, Brasília
HA	Herculano Alvarenga collection, Taubaté
MADJ	Museu: Arquidiocesano Dom Joaquim, Brusque
MCPUCRS	Museu de Ciências da Pontificia Universidade Católica do Rio Grande do Sul, Porto Alegre
MF	Museu da Fauna, Rio de Janeiro
MHNCI	Museu de História Natural Capão da Imbuia, Curitiba
MN	Museu Nacional, Rio de Janeiro
MPEG	Museu Paraense Emílio Goeldi, Belém
MZUSP	Museu de Zoologia da Universidade de São Paulo, São Paulo
NM	Naturhistorisches Museum, Wien
RG	Rolf Grantsau collection, São Bernardo do Campo
WBC	Werner Bokermann collection, São Paulo
ZM	Zoologisk Museum, København

Personal Communications;

Jorge Albuquerque (JA), Luiz dos Anjos (LA), Werner Bokermann (WB), Leo Fukui (LF), Pedro Lima (PL), Paulo Martuscelli (PM), William Mattox (WM), Fábio Olmos (FO), José Pacheco (JP), Marco da Ré (MR), Marcelo Sousa (MS), Fernando Straube (FS), Alcidio Witeck (AW) and Carlos Yamashita (CY).

AMAPÁ - (AP)

- (1) Maracá Island: (2°05'N, 50°25'W); Maracá-Jipioca Ecological Station, 23.i.1994, mangrove environment (JP).
- (2) Fazenda Macarry: (2°N, 50°30'W); 12.xii.1988, (# 987-70588) shot, banded in Alaska, USA on 27.vii.1986 (BBL).

PARÁ - (PA)

- (3) Praia de Cajutuba: (0°36'S, 47°43'W); iii.1835, immature male (NM.40337); 18/19.iii.1835, adult male (NM.48043), mangrove environment (Pelzeln, 1868-1870).
- (4) Bragança: (1°03'S, 46°45'W); Cacté River, 2.iii.1979, immature male (# 686-03487, V97) shot, banded in Ontario, Canada on 18.vi.1978 (BBL).
- (5) Lago Grande: (2°16'S, 54°17'W); iv.1988, female (# 987-91596) shot, banded in Texas, USA on 30.iv.1987 (BBL).
- (6) Marabá: (5°21'S, 49°07'W); right bank of Tocantins River, Praia da Estrela, near Itupiranga, 20.xi.1985, immature female (# 987-41146, 7B5), banded in Keewatin, Canada on 5.viii.1985 (BBL, MPEG 38562).

AMAZONAS - (AM)

- (7) Manaus: (3°08'S, 59°55'W) (CY).
- (8) Mamirauá Ecological Station: (2°58'S, 64°54'W); near Tefé, 9.iii.1994 (JP).
- (9) Aiapuã: (4°27'S, 62°08'W); Purus River, i/ii.1986, female (# 987-44193), banded in Maryland, USA on 5.x.1985, recovered in Florida, USA on 18,19 and 21.x.1985 (BBL).
- (10) Carauari: (4°52'S, 66°54'W); Purus River, 29.iv.1984, (# 987-29665) captured and released, banded in Manitoba, Canada on 1.viii.1983 (BBL).

(11) Prainha: (9°19'S, 67°30'W); xii.1967, female (# 617-02172) shot, banded in Texas, USA on 11.x.1967 (BBL).

PIAUI - (PI)

(12) Parnaíba: (2°54'S, 41°40'W); 19.iv.1991, (# 816-81130) captured and released, banded in Ontario, Canada on 16.vii.1990, recovered in Rio de Janeiro on 17.i.1991 (BBL).

(13) Dom Inocêncio: (9°01'S, 42°42'W); 23.xii.1992, caatinga environment (MR).

RIO GRANDE DO NORTE - (RN)

(14) Açú: (5°34'S, 36°54'W); 15.ii.1982, (# 987-39774) shot, banded in Alaska, USA on 12.vii.1980 (BBL).

(15) Natal: (5°47'S, 35°13'W); 18.iii.1981, female (# 987-15200) shot, banded in Virginia, USA on 9.x.1979 (BBL).

PARAÍBA - (PB)

(16) Cabedelo: (6°58'S, 34°50'W) (Albuquerque, 1985).

(17) João Pessoa: (7°07'S, 34°52'W); x.1979, iii.1980 and xi.1981 (Albuquerque, 1985).

PERNAMBUCO - (PE)

(18) Fernando de Noronha Archipelago: (3°41'S, 32°25'W); 19.x.1987, adult female (Antas *et al.*, 1988).

(19) Recife: (8°03'S, 34°54'W); 20.ii.1986, adult female (# 987-75326) captured, banded in Texas, USA on 3.v.1985. Days after 3 other peregrines were captured in the same place: adult male, immature male and immature female, urban environment (BBL).

(20) Escada: (8°22'S, 35°14'W); 16.xii.1990, adult male (# 816-88618), banded in New Jersey, USA on 29.ix.1987 (BBL).

ALAGOAS - (AL)

(21) Palmeira dos Índios: (9°22'S, 36°52'W); xii.1984, adult male (# 816-10801) shot, banded in Maryland, USA on 25.ix.1975, recovered in Alaska, USA on 15.vii.1984 (BBL).

(22) Maceió: (9°40'S, 35°43'W); 24.i.1991, the same captured in Pilar (BBL).

(23) Pilar: (9°34'S, 35°54'W); 8.i.1991, (# 987-87708) captured and released, banded in Newfoundland, Canada on 23.vii.1990 (BBL).

(24) São Miguel dos Campos: (9°47'S, 36°05'W); iv.1984, (# 987-62217) shot, banded in Alaska, USA on 21.vii.1983 (BBL).

Jequiá River, i.1986, adult (Teixeira *et al.*, 1987).

SERGIPE - (SE)

(25) Aracaju: (10°55'S, 37°04'W); ix.1992, 17.xi.1993 and 4.xi.1994, urban environment (MS).

BAHIA - (BA)

(26) Curaçá: (8°59'S, 39°54'W); ix.1994, caatinga environment (MR).

(27) Sento Sé: (9°40'S, 41°18'W); 22.ii.1993, caatinga environment (MR).

(28) Jacobina: (11°11'S, 40°31'W); Antônio Teixeira Sobrinho Lagoon, 1983, male (# 816-35924) shot, banded in Georgia, USA on 6.x.1981 (BBL).

(29) Barra: (11°05'S, 43°09'W); São Francisco River, i.1908, immature female (MZUSP 7613).

(30) Barreiras: (12°08'S, 45°W) (PL).

(31) Lençóis: (12°34'S, 41°23'W); xii.1988, male and female (PL).

(32) Mata de São João: (12°31'S, 38°17'W); Praia do Forte (PL).

(33) Camaçari: (12°41'S, 38°18'W) (PL).

(34) Cachoeira: (12°36'S, 38°55'W) (PL).

(35) Areembepe: (12°42'S, 38°10'W) (PL).

(36) Salvador: (12°59'S, 38°31'W); wintering area, Frades and Urubus Lagoons, dunes and urban environments, recorded between November and April (Lima, 1991).

4.i.1993, adult male (# 2206-00654) shot, banded in Maryland, USA on 25.ix.1991 (BBL, RG).

(37) Andaraí: (12°48'S, 41°20'W) (PL).

(38) Ituaçu: (13°49'S, 41°18'W); 1982, (# 877-64514) shot, banded in Yukon Territory, Canada on 16.vii.1981 (BBL).

(39) Abrolhos Archipelago: (18°S, 38°40'W) (Alves *et al.*, 1992).

MATO GROSSO - (MT)

(40) Cáceres: (16°04'S, 57°41'W); iii.1909, immature (Ménégaux, 1917).

MINAS GERAIS - (MG)

(41) Belo Horizonte: (19°55'S, 43°56'W); 9.iv.1994 (JP).

(42) Viçosa: (20°45'S, 42°53'W) (Sick, 1989).

RIO DE JANEIRO - (RJ)

(43) Campos: (21°45'S, 41°18'W); Feia Lagoon, 16.xi.1990 (JP).

(44) Cantagalo: (21°58'S, 42°22'W); 30.x.1988, urban environment (JP).

(45) São Pedro d'Aldeia: (22°51'S, 42°06'W); 18.iii.1989 (JP).

(46) Cabo Frio: (22°53'S, 42°01'W); 18.iii.1989, 22.xii.1993 and 5.i.1994 (JP).

(47) Niterói: (22°53'S, 43°07'W); ii.1987, adult male (MN. 35601).

(48) Rio de Janeiro (22°54'S, 43°14'W); wintering area, urban environment, recorded between October and April (Sick, 1989).

5.iv.1983, adult male trapped, banded (# T-08501) and released, recaptured on 21.xi.1983 and 18.ii.1986 in the same place, Fundão Island (Coelho *et al.*, 1987; CEMAVE).

17.i.1991, (# 816-81130) captured and released, banded in Ontario, Canada on 16.vii.1990, recovered in Parnaíba on 19.iv.1991 (BBL).

23.ix.1949, immature (MF. 1117).

25.iii.1965, Madureira, adult male (MN. 30098).

13.ii.1990, Jacarepaguá, immature male (MN. 36270).

SÃO PAULO - (SP)

(49) Guará: (20°26'S, 47°50'W); 17.i.1975, female (# 877-07506, C57) injured, dead, agricultural environment, banded in Texas, USA on 10.x.1973 (BBL).

(50) Altair: (20°31'S, 49°04'W); 28.xii.1991, (# 1807-30198) injured, dead, agricultural environment, banded in Alaska, USA on 1.vii.1991 (BBL).

(51) Orlândia: (20°43'S, 47°53'W); i.1981, (# 987-39772) injured, dead, agricultural environment, banded in Alaska, USA on 12.vii.1980 (BBL).

(52) Pontal: (21°03'S, 48°05'W); Fazenda Bela Vista, 28 and 29.i.1992 (Pacheco, 1992).

(53) Coroados: (21°20'S, 50°15'W); i.1993, adult (# 987-71061) found dead, agricultural environment, banded in Alaska, USA on 3.vii.1987 (BBL).

(54) Junqueirópolis: (21°31'S, 51°27'W); 7.i.1979, female (# 617-16686, 98E) injured, dead, banded in Virginia, USA on 9.x.1978 (BBL).

(55) Presidente Prudente: (22°07'S, 51°22'W); 1.xi.1991, female (# 1807-20797), banded in Texas, USA on 5.x.1990 (BBL).

(56) Marília: (22°13'S, 49°56'W); 31.i.1986, adult female (#877-81332), hurt wing, sent to USA, banded in Florida, USA on 28.ix.1985 (BBL).

(57) Maracai: (22°35'S, 50°30'W); 24.xi.1983, immature male (#816-54804) dead, banded in Virginia, USA on 10.x.1983 (BBL).

(58) Pedrinhas Paulista: (22°45'S, 50°45'W); 27.iii.1993, (#816-34243, 2R) dead, agricultural environment, banded in Alberta, Canada on 16.vii.1992 (BBL).

(59) Assis: (22°40'S, 50°25'W); x.1987, (#686-02137, 7P6) found dead, agricultural environment, banded in Quebec, Canada on 24.vii.1986 (BBL).

28.xi.1989, immature male (#4083708, 4P) found dead, banded in Sisimiut, Greenland on 28.vii.1989 (ZM; WM).

(60) Tarumã: (22°45'S, 50°34'W); xi.1981, male (#987-39716) found dead, agricultural environment, banded in Alaska, USA on 28.vii.1979 (BBL).

(61) Cândido Mota: (22°40'S, 50°20'W); 30.xii.1993, adult female (#1807-20965) found dead, banded in Texas, USA on 1.x.1990 (BBL).

(62) Iepê: (22°35'S, 51°10'W); Nantes district, Fazenda Pindaiva, 31.xi.1991, female (#1807-20797), the same found in Presidente Prudente (BBL).

(63) Timburi: (23°12'S, 49°36'W); Paranapanema River, Fazenda Conceição, 18.xi.1984, (#987-30589) band found, banded in Alaska, USA on 16.vii.1983 (BBL).

(64) São José dos Campos: (23°11'S, 45°53'W); (Sick, 1989).

(65) Osasco: (23°32'S, 46°46'W); 26.xii.1993, adult male, dead, in Taboão da Serra Zoo (pers. obs.).

(66) São Paulo: (23°32'S, 46°37'W); wintering area, urban environment, recorded between October and April (Pinto, 1978; Sick, 1993).

1.iii.1980, Centro, adult female (HA).

23.xii.1990, Moema, adult female (skeleton, HA).

2.i.1992, Guarapiranga, adult male (skeleton, WBC).

31.i.1992, Congonhas, immature male (skeleton, WBC).

10.ii.1992, Tatuapé, adult female (skeleton, WBC).

- 4.iii.1992, Aclimação, adult female (MZUSP.73274).
 - 11.iii.1992, Liberdade, immature male (skeleton, WBC).
 - 9.i.1994, Pinheiros, adult male (cranium only, MZUSP).
 - 20.i.1994, São Mateus, immature male (cranium only, MZUSP).
 - 24.ii.1994, Parque São Lucas, adult female (WBC).
- (67) São Caetano do Sul: (23°36'S, 46°34'W); 9.i.1987, immature male (WBC).
- (68) São Bernardo do Campo: (23°42'S, 46°33'W); i.1992, urban environment (WB).
- (69) Cubatão: (23°53'S, 46°23'W); 10.xi.1994, adult male, 12.i.1995, immature and 21.iii.1995, adult male, mangrove environment (pers. obs.).
- (70) São Vicente: (23°58'S, 46°23'W); Porchat Island, 9.iv.1994, adult female (LF).
- (71) Santos: (23°57'S, 46°20'W); São Vicente Island, wintering area, urban environment, recorded between October and April (Silva e Silva, 1993).
- 30.iii.1987, adult female trapped, dead (LF).
 - 13.i.1992, Alemoa, adult male (# 4083716, 9E) broken wing, dead, banded in Maniitsoq, Greenland on 5.viii.1989, captured in Virginia, USA on 1.x.1989 (ZM; WM).
 - 26.i.1994, immature male, trapped, banded (# T-08527) and released (CEMAVE).
 - 17.xii.1994, immature male, broken wing (MZUSP.73739).
- (72) São Sebastião: (23°50'S, 45°25'W); xi.1964 (Müller, 1966).
- (73) Alcatrazes Island: (24°07'S, 45°42'W); 1.xi.1992, adult (FO).
- (74) Iguape: (24°43'S, 47°33'W); ii.1993, adult male (PM).
- (75) Cardoso Island: (25°08'S, 47°58'W); 20.i.1991, adult male, 30.vi.1992, immature (PM).

PARANÁ - (PR)

- (76) Cornélio Procopio: (23°08'S, 50°39'W); 2.xii.1989, male (# 816-86610)

found dead, agricultural environment, banded in Virginia, USA on 2.x.1989 (BBL).

(77) Porto Camargo: (23°21'S, 53°43'W); 14.ii.1988 (Anjos & Seger, 1988; LA).

(78) Luisiana: (24°10'S, 52°10'W); i.1992, male (# 816-15228) found dead, banded in New Jersey, USA on 3.x.1991 (BBL).

(79) Formosa do Oeste: (24°15'S, 53°20'W); 31.xii.1989, 9.ii.1990, adult male (# 816-77968) hurt wing, banded in Maryland, USA on 7.x.1987 (BBL). Alive in captivity in Curitiba Zoo (pers. obs.).

(80) Jesuítas: (24°20'S, 53°10'W); 30.i.1990, the same found in Formosa do Oeste (BBL).

(81) Santa Helena: (24°56'S, 54°23'W); ii.1987 (FS).

(82) São Miguel do Iguaçu: (25°21'S, 54°15'W); 27.iii.1989 (FS).

(83) Capanema: (25°40'S, 53°48'W); 25.xii.1984, (# 987-29230) found dead, banded in Yukon Territory, Canada on 18.vii.1984 (BBL).

(84) Irati: (25°27'S, 50°39'W); xii.1988 (FS).

(85) Palmeira: (25°25'S, 50°W); 17.ii.1988 (LA).

(86) Curitiba: (25°25'S, 49°15'W); vi.1984 (FS).
1991, adult male (MHNCI.4142).
22.iii.1992, individual dead in Curitiba Zoo.
26.iii.1993 (FS).

(87) Guaraqueçaba: (25°17'S, 48°21'W); x.1985 (FS).

(88) Porto Amazonas: (25°33'S, 49°53'W); ii.1985, male (# 816-38109) shot, banded in Virginia, USA on 30.ix.1983 (BBL).

(89) Itapejara do Oeste: (25°58'S, 52°49'W); Chopim River, 17.xi.1989, immature female (# 4021375, 6K) found dead, banded in Sisimiut, Greenland on 27.vii.1989 (MN. 36719; ZM; WM).

(90) Matinhos: (25°49'S, 48°32'W); 15.i.1993 (FS).

(91) Itacolomis Islands: (25°50'S, 48°24'W); (Moraes & Krul, 1993).

SANTA CATARINA - (SC)

(92) Vale do Itajaí: (aprox. 27°05'S, 48°55'W); (MADJ).

(93) Lontras: (27°10'S, 49°33'W); 1950, immature (MN. 32530).

(94) Mondaí: (27°05'S, 53°25'W); Antas River, 13.iii.1993, adult male (# 816-50995) hurt wing, recovered and released in Florianópolis on 30.iv.1993, banded in Florida, USA on 8.x.1986 (BBL).

(95) Arvoredo Island: (27°18'S, 48°22'W); i.1994 (JA).

(96) Florianópolis: (27°35'S, 48°34'W); Santa Catarina Island, Conceição Lagoon, iv.1994, adult, dunes environment (JA).

(97) Moleques do Sul Islands: (27°51'S, 48°26'W); 14.ii.1978 (Sick, 1989).

(98) São Joaquim: (28°18'S, 49°56'W); Serra do Rio do Rastro, 6.x.1991 (JP).

RIO GRANDE DO SUL - (RS)

(99) Aparados da Serra National Park: (29°09'S, 50°05'W); (Belton, 1984).

(100) Nova Petrópolis: (29°22'S, 51°08'W); (JP).

(101) Cruz Alta: (28°39'S, 53°36'W); xi.1973, male (# 576-86902, C08) shot, banded in Texas, USA on 10.x.1973 (BBL).
1.i.1977 (Albuquerque, 1978).

(102) São Leopoldo: (29°46'S, 51°09'W); 10.xi.1976 and 30.i.1977 (Risebrough *et al.*, 1990; Belton, 1984).

(103) Sapucaia do Sul: (29°50'S, 51°09'W); (Belton, 1984).

(104) Porto Alegre: (30°S, 51°10'W); Guaíba River, wintering area, urban environment, recorded between October and April (Albuquerque, 1984) and early September (Albuquerque, 1978).

13.ii.1989, male (# 816-50989) found dead, banded in Florida, USA on 2.x.1986 (BBL; MCPUCRS. 01).

(105) Santa Maria: (29°41'S, 53°48'W); iii.1974 (Belton, 1984).

iii.1994, female (# 1807-26557) found dead, banded in Texas, USA on 29.ix.1993 (BBL).

(106) Cachoeira do Sul: (30°02'S, 52°54'W); Fazenda São Carlos, 17.xi.1988 (AW).

xi.1993, adult captured, dead (AW).

3.i.1994, adult, urban environment (AW).

14.xi.1994 (AW).

(107) Palmares do Sul: (30°16'S, 50°31'W); 16.i.1980, adult female (Albuquerque, 1982).

(108) Encruzilhada do Sul: (30°32'S, 52°31'W); 3.ii.1982 (Risebrough *et al.*, 1990).

(109) Amaral Ferrador: (30°52'S, 52°15'W); Camaquã River, 9.xii.1987 (AW).

(110) Mostardas: (31°06'S, 50°57'W); 6.ii.1981, adult female (Risebrough *et al.*, 1990).

(111) Tavares: (31°12'S, 51°01'W); Peixe Lagoon, 29.iii.1988 to 12.iv.1988 and 15 to 18.iv.1989, dunes environment (AW).

(112) São Gabriel: (30°22'S, 54°20'W); Fazenda Soutal, 23.xii.1993, female (# 1807-48065) found dead, agricultural environment, banded in Texas, USA on 28.ix.1993 (BBL).

(113) Candiota: (31°36'S, 53°44'W); 3.i.1984, adult female (# 987-30337), banded in Texas, USA on 9.x.1979 (BBL).

(114) Pelotas: (31°46'S, 52°20'W); 11.ii.1994, adult, urban environment, immature in São Gonçalo Channel in the harbor (pers. obs.).

13.ii.1994, immature male and adult female in aerial pursuit, vocalizing (pers. obs.).

(115) Povo Novo: (31°50'S, 52°10'W); 26.iii.1990 (AW).

(116) Rio Grande: (32°01'S, 52°05'W); wintering area, urban and aquatic environments, recorded between November and April (Witeck, 1988).

15.i.1981, immature (Risebrough *et al.*, 1990).

27.ii.1986, adult female trapped, banded (# T-08526) and released, recaptured on 7.xi.1987 in the same place (Witeck, 1988; CEMAVE).

19.ii.1994, adult (pers. obs.).

(117) Taim Ecological Station: (32°30'S, 52°30'W); 24.i.1981, adult female (Risebrough *et al.*, 1990).

10.iv.1983 and xi.1985, Taim River and Mirim Lagoon (AW).

2.xi.1987 and 1.i.1988, near the station (AW).

26.xii.1988 and 3.i.1990, Nicola Lagoon (AW).

