galganoi, *P. cultripes*. Valdespino [29T PG 96] (10-02-1984), *D. galganoi*. Valparaíso [30T TL 77] (30-05-1984), *P. cultripes*. Vidayanes [30T TM 84] (31-08-1986), *P. cultripes*. Villabuena de las Peras [30T TM 54] (28-05-1984), *P. cultripes*. Villafáfila [30T TM 83] (11-06-1980, 09-05-1985), *P. cultripes*. Villamor de los Escuderos [30T TL 87] (01-03-1983), *D. galganoi*. Villamor de Cadozor [29T QF 47] (16-04-1984), *P. cultripes*. Villar del Rey [29T QF 37] (06-03-1984), *P. cultripes*. Villarino de Cebal [29T QG 23] (18-04-1984), *P. cultripes*. Villatube [30T TM 80] (08-05-1985), *P. cultripes*. Villaveza de Valverde [30T TM 64] (10-05-1985), *H. arborea*. (Zamora) (ver) [30T TM 62] (09-05-1985) *P. cultripes*.

Zaragoza: Navardun [30T XN 50] (26-04-1972), *P. punctatus*.

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AUTOCHTHONOUS AND COLONIZING SPECIES OF FROGS IN "CARLOS BOTELHO" STATE RESERVE, SOUTHEASTERN BRAZIL

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Key Words: Amphibian community, colonizing species, "Carlos Botelho" State Reserve, Atlantic rainforest, Brazil.

In the last few decades, several amphibian species in southeastern Brazil have been object of taxonomic and natural history studies (cf.: COCHRAN, 1955; BOKERMANN, 1966a; 1966b; VIZOTTO, 1967; LUTZ, 1973; FROST, 1985; HADDAD & SAZIMA, 1992 and references). Nevertheless, researchers have given little attention to species inventory and community studies in the region (but see HADDAD, et al. 1988; HEYER, et al. 1988; CARDOSO, et al. 1989; WEYGOLDT, 1989; HADDAD & SAZIMA, 1992).

Although the coastal Atlantic rainforest of Brazil is among the most endangered ecosystems in the world, amphibian species of the State of Sao Paulo have been listed in only 7 of the 111 protected areas (BARRETO, 1989; BOKERMANN, 1966b; W.C.A. BOKERMANN, pers. com.).

Research conducted in these areas,

Figure 1: Specimen of *Gastrotheca* cf. *microdiscus* found on a bromelia. Photo: Werner C. A. Bokermann.

regarding amphibian ecology and natural history are scarce and, just recently, community studies conducted at "Estaçäo Ecológica de Boracéia" (HEYER et al. 1990) and "Serra do Japi" (HADDAD & SAZIMA, 1992) were documented in the scientific literature.

Observations on the anuran community were irregularly conducted in different seasonal periods between May, 1987 and August, 1990, in the "Carlos Botelho" State Reserve. This reserve has an area of 37,644 ha, and is located in the "Serra de Paranapiacaba", a section of the "Serra do Mar" mountain complex. The "Serra de Paranapiacaba" is a water-shed of the local drainage system, and no brook, stream or river enters the Carlos Botelho Reserve from the plateau. The height ranges between 22 and 1003 m.

Most of the reserve is covered by mature and secondary Atlantic rainforest (HUECK, 1972a; 1972b). Some surrounding and marginal areas in the reserve contain planted forests of *Araucaria angustifolia*, *Pinus* sp and *Eucalyptus* sp , banana plantations and pastures.

A study area was delimited inside the reserve of approximately 10,000 ha (15 x 6.5 km), with the geographic coordinates: 24° 03' to 24° 13' S and 47° 55' to 48° 00' W. This area was divided into two large physiographic units by using IBGE-1974 maps (1:50,000) and Landsat TM-5 Satellite Images, processed by INPE and NMA-EMBRAPA:

I - Mountainous region formed by ridges (IA) and a slope on the south side (IB), mainly coverd by mountain rainforest. "V-valleys" occur both in "IA" and "IB" sub-units. Elevation ranges from 50 to 1003 m.

II - Sedimentary valley of low altitude (between 22 and 50 m), covered by lowland rainforest.

BUFONIDAE:	
Bufo crucifer	IA, IB, II, a, b, d, e
B. ictericus	IA, IB, II, a, b, c, e, f
Bufo gr. *typhonius*	II, a
Dendrophryniscus cf. *brevipollicatus*	IB, f
HYLIDAE:	
Gastrotheca cf. *microdiscus*	IA, a
Hyla cf. *arildae*	IA, a
H. albomarginata	II, b
H. albopunctata	IA, c
H. albosignata	IA, II, a
H. altera	II, b
H. bischoffi	IA, IB, a, b, c, d
H. circumdata	IA, a, e
Hyla gr. *circumdata*	II, a
H. elegans	IA, b, d
H. faber	IA, IB, b, d, e
H. "geographica"	II, a, b
H. microps	IA, IB, d
H. minuta	IA, IB, II, b, d, e
H. pardalis	IA, e
H. polytaenia	IA, c
H. prasina	IA, b, c
Hyla sp (*berthalutzae*?)	II, d
Hyla werneri	II, b
Phyllomedusa distincta	IA, IB, II, a, b, e
Scinax brieni	IA, b
Scinax cf. *catharinae*	IA, IB, a
S. fuscovaria	IA, c
S. hayii	IA, IB, II, b, e
Scinax gr. *rubra*	IA, IB, a, f
Sphaenorhynchus sp	IA, a
LEPTODACTYLIDAE:	
Adenomera marmorata	IA, II, f
Crossodactylus cf. *dispar*	IA, a
Eleutherodactylus binotatus	II, a
E. guentheri	IA, a
Leptodactylus cf. *ocellatus*	IA, b, c
Leptodactylus cf. *fuscus*	IA, d
Physalaemus cuvieri	IA, d
P. olfersi	IA, IB, a, b
Physalaemus cf. *spinigerus*	IB, II, a, d
Proceratophrys boiei	IA, IB, a, e, f

Table 1: Occurrence of amphibian species in six biotypes in an area of 10,000 ha at "Carlos Botelho" State Reserve (Sao Paulo State, Brazil).

Physiographic Units:

I = Mountainous zone with "V-valleys": **IA** = ridges, **IB** = slope

II = Lowland Sedimentary Valley

(see next page)

Biotypes:

a = rivers, streams and brooks surrounded by native forest (mature or secondary);
b = artificial permanent lakes surrounded by *Typha* sp and native forest;
c = artificial permanent lakes surrounded by *Typha* sp, pioneering herbaceous vegetation and artificial forest of *Araucaria angustifolia* + pioneering bushes;
d = intermittent artificial lakes, surrounded by *Typha* sp and native forest;
e = temporary pools surrounded by pioneering herbaceous vegetation and secondary forests along unpaved roads;
f = native forests outside the zone area of water sources, lakes or temporary pools.

The specimens collected (adults and tadpoles) were photographed and identified through direct comparison with specimens deposited in the WCAB collection (Sao Paulo, Brazil). In some instances, calls were also tape recorded.

In this study, species identification, as well some of the taxonomic names used are preliminary, because most of the species or species groups need extensive systematic revisions (Werner C.A. Bokermann, pers. com.)..

A total of 40 species belonging to 3 families (Bufonidae, Hylidae and Leptodactylidae) were found (Table I). Most of the species belong to the Hylidae family, with 26 species, or the Leptodactylidae family, with 10 species.

Some species were found only in the mountain zone (physiographic unity I: *Hyla* cf. *arildae*, *H. circumdata*, *Gastrotheca* cf. *microdiscus*, *Crossodactylus* cf. *dispar*, *Proceratophrys boiei*), others only in the lowland sedimentary valley (*Bufo* gr. *typhonius*, *Hyla* "*geographica*"), and others were present in the whole range of heights (*Hyla albosignata*, *Phyllomedusa distincta*, *Adenomera marmorata*) (table I).

Most of the species found in the study area may be divided into three main groups, according to the habitat they live in and/or use to reproduce. The first group is composed by species that typically inhabit forests, such as: *Bufo* gr. *typhonius*, *Dendrophryniscus* cf. *brevipollicatus*, *Gastrotheca* cf. *microdiscus*, *Hyla* cf. *arildae*, *H. albosignata*, *H. circumdata*, *Scinax*. cf. *catharinae*, *Crossodactylus* cf. *dispar*, *Eleutherodactylus* spp, *Proceratophrys boiei*. The second group consists of species that inhabit semi-open and open plant formations: *Hyla albopunctata*, *H. faber*, *H. microps*, *H. minuta*, *Leptodactylus* cf. *ocellatus*, *Leptodactylus* cf. *fuscus*, *Physalaemus cuvieri*. The third group consists of species that are found inside the forest and also in semi-open and open plant formations: *Bufo crucifer*, *B. ictericus*, *Hyla bischoffi*, *Phyllomedusa distincta*.

In the reserve, the species of semi-open and open vegetal formations are associated with human-made habitats such as roads, dams, power lines, human habitations, etc. In these habitats, deforestation and the colonization of allochthonous plants (ex: *Hedichium coronarium*, *Musa* spp, *Typha* sp) probably provided favourable biotypes for the penetration of some frog species from the plateau, which is today dominated by mosaics of semi-open and open formations. The populations of these amphibian "colonizing species" (e. g., *H. albopunctata*, *H. faber*, *H. minuta*, *Leptodactylus* cf. *fuscus*, *Leptodactylus* cf. *ocellatus*, *Physalaemus cuvieri*) may represent a stock that may colonize new areas in the reserve's interior, if more human-made disturbances are present. The biotype of native forest (mature or secondary) with artificial constructions for water accumulation (e.g.: dams), may be utilized by some forest species and by colonizing species.

Comparing categories "b" and "c" , which have similar biotype (two lakes of similar dimensions, with *Typha* sp and pioneering herbaceous vegetation) but surrounded by different kinds of forest (one native and the other planted), there is a greater number of

species (n = 15) in the area surrounded by native forest than in the area surrounded by the planted forest of *Araucaria angustifolia* (n = 6).

The amphibian colonizing species were not detected in areas of native forest where there were no artificial accumulations of water. In the areas covered by native forest, where there were no neighbouring points of water accumulation in the soil surface (e.g.: ponds, lakes, streams, etc.), fewer species were found (n = 5).

Comparing the total number of amphibian species (n = 40) detected in the 10,000 ha study area of Carlos Botelho Reserve, with those found at Boracéia Ecological Station, another reserve in the Serra do Mar mountain complex (HEYER, et al. 1990), species richness in Carlos Botelho may be considered high (see also BOURLIERE, 1989 for other tropical forest).

In Carlos Botelho State Reserve, as probably happened in Boracéia Ecological Station, the species richness today is partly a consequence of recent colonization by taxa that may not have been present in the area before human interference (HEYER, et al. 1988, 1990). These invasions may "compensate" recent local extinctions of some taxa, and maintain the species richness at high levels.

Due to the great .variety of natural habitats, some artificial biotypes, and important altitude differences, more than 60 amphibian species are expected (including other families, such as Brachycephalidae, Centrolenidae and Microhylidae) in the 37,644 ha area of The "Carlos Botelho" Reserve.

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ESTATUS DE *Dermochelys coriacea* EN EL MEDITERRÁNEO Y DOS NUEVAS CITAS PARA EL MEDITERRÁNEO NOROCCIDENTAL

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La presencia de la tortuga laúd, *Dermochelys coriacea*, ha sido referenciada en el Mediterráneo desde finales del siglo XVIII, existiendo citas en todos los países costeros salvo en Albania y Marruecos (DELAUGERRE, 1987). Las observaciones han sido especialmente abundantes en el área occidental, destacando las citas del Golfo de León (OLIVER, 1986; LAURENT, 1991).

La mayoría de las citas corresponden a individuos aislados aunque, en el Estrecho de Gibraltar, se observaron un total de 24 individuos, que se desplazaban en grupos de 2 a 11, en un período de menos de 4 años (DELAUGERRE, 1987). FERNÁNDEZ & MORENO (1984) citaron 11 ejemplares muertos en las playas de Ceuta entre 1980 y 1983. PASCUAL (1985) a su vez apunta 5 observaciones en la costa mediterránea de la Península Ibérica: Salou (Tarragona), 1891; Roses (Girona), 1960?; Villajollosa (Alicante), 1963; Marbella (Málaga), 1977; Port de la Selva (Girona), 1977; así como 3 observaciones más en Mallorca: Isla Dragonera, 1808; La Porrasa-Palma de Mallorca, 1916 y Porto Colom, 1938; posteriormente la especie ha sido citada los años 1950, 1978 y 1985 (DELAUGERRE, 1987). MAYOL et al. (1988) añaden 3 citas más modernas en Águilas, Murcia (1975), Ibiza (1977) y Formentera (1978). Por otra parte, CRESPO et al. (1988) recogen 4 observaciones realizadas por Navarro en 1941 y 35 observaciones más entre Agosto de 1975 y Diciembre de 1987, de las cuales 20 se dieron en el área comprendida entre el Estrecho de Gibraltar y el límite Este del mar de Alborán y 15 en la zona entre la costa levantina y balear la mayoría en época estival entre el Cabo de Gata, Baleares y el Delta del Ebro.

En la cuenca oriental del Mediterráneo, la tortuga laúd es mucho menos frecuente. Así, para el caso de Grecia, todas las citas corresponden al mar Egeo, al Norte del paralelo 38° (MARGARITOULIS, 1986), siendo rara en Turquía e Israel. Respecto a este último país, SELLA (1982) apunta la evidencia de posibles puestas basándose en unos rastros encontrados en la playa de Palmachim, al Sur de Tel-Aviv, en 1963.