

# Amphibia, Anura, Bufonidae, *Melanophryniscus spectabilis* Caramaschi and Cruz, 2002: Distribution extension and geographic distribution map

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**ABSTRACT:** We present here the first records of *Melanophryniscus spectabilis* out of its type locality and evidences of a restricted distribution for this species. We also discuss its conservation status.

*Melanophryniscus spectabilis* Caramaschi and Cruz, 2002 is a medium sized species of the *M. tumifrons* group, distinguished by having ground color of dorsum and flanks dark brown with a distinctly marbled pattern of sinuous and irregular pale yellow stripes (Caramaschi and Cruz 2002). It was described based on specimens collected by the eminent German entomologist Fritz Plaumann, who lived and extensively collected in western Santa Catarina state. Caramaschi and Cruz (2002) stated municipality of Nova Teutônia, state of Santa Catarina, Brazil as type locality, corrected to Nova Teutônia, Municipality of Seara, Santa Catarina, Brazil in IUCN SSC Amphibian Specialist Group (2010).

In the original description Caramaschi and Cruz (2002) associated a report and description of a specimen from the province of Misiones, Argentina made by Straneck *et al.* (1993) to *Melanophryniscus spectabilis*, also followed by Garcia *et al.* (2004). Baldo and Basso (2004) analyzed the specimen cited by Straneck *et al.* (1993) and additional material from Misiones concluding that it doesn't correspond to *M. spectabilis* referring the specimens of Misiones as *Melanophryniscus* sp. (aff. *tumifrons*). Until now *M. spectabilis* is known only from its type locality. However, IUCN's geographic distribution map of *M. spectabilis* indicates its occurrence in all western region of Santa Catarina state and in the province of Misiones, Argentina (see Garcia *et al.* 2004; IUCN SSC Amphibian Specialist Group 2010).

In September 2007, during faunal rescue in the Alto Irani hydroelectric power plant at the Irani River, a tributary of the Uruguai River, we collected about 60 specimens of *Melanophryniscus spectabilis*, most of them in the same point of the river (an area of ca. 900 m<sup>2</sup>). Between 2007 and 2010 we registered and collected specimens in several other localities in the river basins of Irani, Do Engano and Jacutinga, all tributaries of the Uruguai River (Table 1, Figure 1). Some specimens were collected in pitfalls traps, but we found them most frequently under

rain in typically explosive reproductive activity (*sensu* Wells 1977) on the running water on roadsides. These new records correspond to the first outside the type locality extending the range distribution of the species in about 42 km northeast, 23 km east, 13 west and 12 km southeast (see Figure 1).

*Melanophryniscus spectabilis* was described based on specimens collected in the years 1951 and 1966, and until now, nothing is known about its biology, including its color in life. We found a wide variation on coloration patterns from darker patterns with irregular stripes slightly yellowish to patterns with predominant bright yellow stripes. Ventrally it presents a wide orange to red-orange blotch, from the half to posterior region of the belly, including most of the thighs. Remaining belly region and chest are black, the inferior part of the anterior limbs and mandible contour present yellowish blotches, but orange to red-orange coloration is also found, hand palms and feet sole are orange to red (Figure 2).

Specimens were vouchered at the herpetological collection of the Universidade Federal de Santa Catarina (CHUFSC), Fundação Universidade Regional de Blumenau (FURB) and Collection "Célio F. B. Haddad" (CFBH), at the Universidade Estadual Paulista, Rio Claro (Appendix 1).

Fritz Plaumann collected a large amount of individuals, and he probably did it near his house, now the Fritz Plaumann Entomological Museum. Recently, on 5 December 2010, one of us (TSK) and Ivan B. Amaral found the species in this condition of high local abundance at the type-locality, near and even in front of the Fritz Plaumann Entomological Museum.

Some of us (LOMG and IRG) are working on environmental studies and faunal inventories on western Santa Catarina since 2001, and we have sampled along the large Chapecó River, located west of the Irani River and never found this species. Apparently this species also does not occur in areas east from the Do Peixe River (located east from the Jacutinga River), where we have some well

sampled areas. In December 2010, TSK in collaboration with Ivan B. Amaral and the Instituto Chico Mendes para a Conservação da Biodiversidade (ICMBio), in an effort to localize populations of the genus *Melanophryniscus* in Santa Catarina state, found specimens of *M. simplex* and a probably undescribed species of the genus in the upper Do Peixe River basin, but we found no *M. spectabilis*. Another intensively sampled area, the Floresta Nacional de Chapecó (Lucas and Fortes 2008), where the species is absent, is only 10 km distant from one of our records (Chapecó).

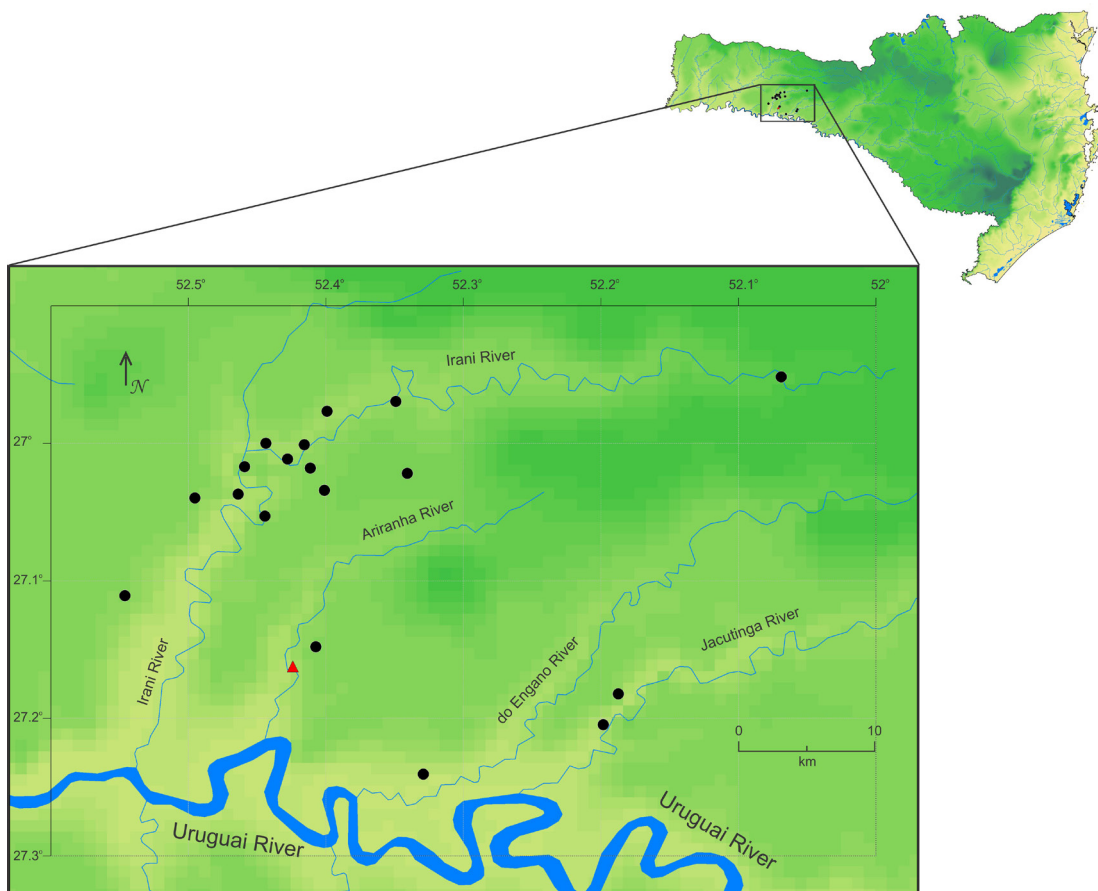
These observations, contrasting with the locally abundant populations we have found even in anthropic areas, make us consider that *Melanophryniscus spectabilis* has a restricted geographic distribution in the deciduous forests of the Uruguai River basin. Apparently its distribution is limited between but not necessarily by the Chapecó River at west and Do Peixe River at east, two large tributaries of the Uruguai River, by the Uruguai River itself at the south and, probably, by the higher areas of plateau at the north, with distinct vegetation cover characterized by the Araucaria forest and steppes. Only three of the new records of *M. spectabilis* were made at altitudes superiores to 700 m asl (Table 1), corroborating the current sense that this species is associated with lower elevations (E.M. Lucas pers. comm. in IUCN SSC Amphibian Specialist Group, 2010 ).

With the new records obtained in this study, the extension of the occurrence known for *Melanophryniscus spectabilis* is about 1000 km<sup>2</sup>. Even considering the probable limits of its occurrence described above, it

persists below 20,000 km<sup>2</sup>. Despite the new records, its area of occupancy has been diminished due to the installation of hydroelectric power plants in the Irani River. Some of the record points presented here were flooded. Moreover, the deciduous forest of the Uruguai River basin in western Santa Catarina, where this species is apparently restricted to, has been severely fragmented due to agricultural and lumbering activities.

The greatest number of records was located next to watershed that runs through ditches on the sides of unpaved roads of rural zones. This demonstrates the species opportunism and its tolerance to some degree of habitat disturbance. However, road and ditches pavement would eliminate environments currently available for the reproduction of *Melanophryniscus spectabilis*. Regional development, in this case, can lead to population decline. Despite these new records, with locally abundant populations, no population was found in protected areas.

In view of uncertainties surrounding its distribution, population status, and ecological requirements *Melanophryniscus spectabilis* is currently classified as Data Deficient (IUCN SSC Amphibian Specialist Group, 2010). Based on the evidence presented in this study we can assume that *M. spectabilis* could be classified in some threat category by the IUCN Red List criteria B1ab (ii, iii), as “vulnerable”, if the probable distribution area is considered (< 20,000 km<sup>2</sup>), or “endangered”, if the current area of occurrence obtained by the data in this study is considered (< 5000 km<sup>2</sup>) (IUCN Standards and Petitions Subcommittee 2010).



**FIGURE 1.** Distribution map of *Melanophryniscus spectabilis*. Some points presented on Table 1 were excluded when overlapping with others due to map scale. Black circles represent new records, red triangle indicates type locality, Nova Teutônia, municipality of Seara. Note the association between record points and the four hydrographic affluent rivers basins of Uruguai River.



**TABLE 1.** Geographic points where *Melanophryniscus spectabilis* was registered during field expeditions, State of Santa Catarina, Brazil.

| MUNICIPALITY  | LOCALITY              | LATITUDE    | LONGITUDE   | ALTITUDE (m) |
|---------------|-----------------------|-------------|-------------|--------------|
| Arabutã       |                       | 27°10'55" S | 52°11'15" W | 550          |
| Arvoredo      | PCH Arvoredo          | 27°03'11" S | 52°26'41" W | 380          |
| Arvoredo      |                       | 27°01'08" S | 52°25'51" W | 605          |
| Arvoredo      |                       | 27°00'06" S | 52°26'33" W | 595          |
| Arvoredo      |                       | 27°00'01" S | 52°26'39" W | 590          |
| Arvoredo      |                       | 26°59'55" S | 52°27'03" W | 540          |
| Arvoredo      |                       | 27°01'02" S | 52°27'35" W | 550          |
| Chapecó       | Monte Belo            | 27°06'40" S | 52°32'48" W | 645          |
| Itá           | Alongside SC-466 road | 27°14'27" S | 52°19'47" W | 410          |
| Itá           |                       | 27°12'16" S | 52°11'54" W | 440          |
| Ponte Serrada |                       | 26°57'07" S | 52°04'10" W | 710          |
| Seara         | Nova Teutônia         | 27°09'45" S | 52°25'28" W | 380          |
| Xanxerê       | Linha Monjolinho      | 26°58'37" S | 52°23'58" W | 545          |
| Xavantina     | PCH Alto Irani        | 27°00'04" S | 52°24'58" W | 470          |
| Xavantina     | Linha palmeira        | 27°01'06" S | 52°24'43" W | 540          |
| Xavantina     | Linha Palmeira        | 27°02'04" S | 52°24'06" W | 760          |
| Xavantina     | Linha Palmeira        | 27°01'20" S | 52°20'29" W | 875          |
| Xavantina     |                       | 26°58'11" S | 52°20'58" W | 525          |
| Xaxim         | Linha Voltão          | 27°02'20" S | 52°27'47" W | 480          |
| Xaxim         | Linha Voltão          | 27°02'14" S | 52°27'51" W | 530          |
| Xaxim         |                       | 27°02'24" S | 52°29'44" W | 610          |

**FIGURE 2.** Coloration patterns in living *Melanophryniscus spectabilis*. In A = couple in amplexus on a temporary stream formed after rain on roadsides. Note yellow pattern of the male in relation to the female. B to G = variations in dorsal patterns, with predominant dark to predominant yellow coloration. H and I = ventral patterns. Note the orange coloration on the inferior part of the venter, and reddish hand palms and feet soles

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**APPENDIX 1.** Specimens of *Melanophryniscus spectabilis* recently collected.

**BRAZIL: State of Santa Catarina:** municipality of Arbutã (UFRGS 5243-47), municipality of Arvoredo (CFBH 21133-34, 24059-60; CHUFSC 1460, 1465-83; FURB 14052, 14054, 14056, 14084-86; UFRGS 4302-04, 4306-08, 5262-63), municipality of Chapecó, Monte Belo (CHUFSC 1828-31), municipality of Itá (UFRGS 4305, 5248), municipality of Ponte Serrada (CFBH 25762-63), municipality of Seara (FURB 14053, 14055), Nova Teutônia (UFRGS 5249-57), municipality of Xanxerê (CFBH 21147; FURB 14082-83), Linha Monjolinho (CFBH 21947), municipality of Xavantina (CFBH 18269-79, 24061, 24840; CHUFSC 1558-59, FURB 14051), Linha Palmeira (UFRGS 5258-61), municipality of Xaxim, (CHUFSC 1688; CFBH 22758).