

# Rediscovery and subsequent observations of Kaempfer's Tody-tyrant *Hemitriccus kaempferi* in Santa Catarina, Brazil, with notes on conservation, life history and plumage

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## Summary

Previously known from two specimens, Kaempfer's Tody-tyrant *Hemitriccus kaempferi* is a globally threatened species endemic to the southern Brazil Atlantic Forest. The first field observations of this little-known taxon were made in the 1990s and our data therefore provide the first published information on its natural history, including breeding biology, behaviour and vocalizations, as well as a new locality. As very little information has appeared in the literature concerning the identification of this species, we present notes on its plumage and habits. Remarks concerning the species's conservation prospects and the importance of the remaining forest in the vicinity of the type-locality for other threatened bird species are made.

## Introduction

Kaempfer's Tody-tyrant *Hemitriccus kaempferi* is a poorly known endemic of lowland Atlantic Forest of north-eastern Santa Catarina, Brazil that was not even generally afforded specific status until the work of Fitzpatrick (1976). Prior to the 1990s, the species was wholly unknown in life. Its existence rested solely on the basis of two specimens: the type, collected by Emil Kaempfer at Salto do Piraí, near Joinville, Santa Catarina (Naumburg 1939) on 3 June 1929 (Collar *et al.* 1992), and the second, only recently recognized, taken by H. F. Berla at Brusque, Santa Catarina in 1950 and retained in the Museu Nacional de Rio de Janeiro (Teixeira *et al.* 1991). There were no subsequent records until July 1991, when M.P. observed a single individual within 1 km of the type-locality. Although Collar *et al.* (1992) and Ridgely and Tudor (1994) announced the rediscovery, and Stattersfield *et al.* (1998) made passing mention of our observations, full details have never been published.

Since 1995, there have been a number of additional observations at Salto do Piraí and another locality by the authors and John Wall. These have provided new data concerning the species's life history, nesting ecology and the first recordings of its voice. Given that virtually all that is known of *H. kaempferi* are the scant details published by Collar *et al.* (1992) and Ridgely and Tudor (1994),

we take the opportunity to provide new information on its conservation and ecology, and present the first field description. Furthermore, we present brief information on other threatened bird species recorded during our visits to Salto do Pirai, in order to support calls for the effective conservation of this biologically rich area (Collar *et al.* 1992).

### Records

M.P., following two days of searching for *H. kaempferi* around the type-locality, watched a single individual for 10 minutes on 20 July 1991, *c.* 1.5 km downstream of the power station, at Salto do Pirai (26°18'S 48°50'W).

Subsequent observations by the authors, and John Wall, have all been made within 80 m of the Rio Pirai, *c.* 500 m downstream of the gates to the hydroelectric plant. J.A.T. watched one individual in this area on 3–4 October 1995. On 7 February 1997, in the early morning, G.M.K. together with David Beadle, Rod McCann and Robert Williams found one in the same area in which J.A.T. had made his observations. G.M.K. returned to this area on 28–29 October 1998, together with a small group and, in the early morning of the second day, found a pair nest-building just a few metres upslope of the 1997 observation. J.M.B. recorded two different individuals on 8–11 April 1997 within 150 m of the February observation. On 20 April 1997, in precisely the same area as the 1995 observations, L.N.N. briefly observed a single individual at 15h30 for approximately 30 seconds. Thirty minutes later, what was presumably the same bird, reappeared in the same area for *c.* 10 seconds. On 7 September 1997, J.W. briefly observed *H. kaempferi* in this area, very close to the Rio Pirai.

### New locality

On 21 April 1998, L.N.N. recorded a lone individual at the Reserva Particular do Patrimônio Natural de Ponta Velha, Itapoá, in northern Santa Catarina (*c.* 26°06'S 48°40'W). It was located at 11h00, *c.* 1.5 m above the ground at the edge of a trail through primary lowland evergreen forest. It was very tame and moved rapidly from branch to branch, in the same manner as most *Hemitriccus*, with short noisy flights. A pair was observed in this area, for 1.5 hours, on 15 July 2000 (J.M.B., L.N.N.); next day another was found 1–2 km away.

### Habitat and behaviour

All our observations were made in low-lying areas (150 m) at shrubby forest edges, well-shaded secondary growth (with *Cecropia* sp. predominant) and sections of fairly low open woodland with many heliconias and dense ground flora. The canopy was 12–15 m at its highest (epiphytes abundant on the taller trees), but often under 10 m, tree girths were fairly small (broadest dbh 30–40 cm). Although large areas of tall canopy, mature evergreen forest are present at the site, and considerable time was spent in such habitat, *H. kaempferi* was not seen there. All, except the April 1998 observation (see 'New locality'), were made close to river courses. On two occasions, a pair was seen crossing a dirt road, 2.5

m wide, on one occasion entering a rather open garden with scattered low trees, close to a regular territory of the species.

Birds fed within the sparse foliage of the outer canopy and midstoreys of medium-sized trees, usually at 1–3 m. They were quite active, in a manner typical of the other members of the genus (e.g. *H. margaritaceiventer*). Members of a pair foraged within 3 m of one another. M.P. noted an individual hover-gleaning in the subcanopy of a tree, at c. 6 m, although it subsequently descended to c. 2 m, where it loosely associated with a Golden-crowned Warbler *Basileuterus culciivorus*. Other feeding observations have involved one seen beating a green caterpillar against a branch, prior to consumption, and regular short (<50 cm) sallies to fly-catch within neighbouring vegetation. *H. kaempferi* is usually relatively conspicuous, even within forest, regularly perching on exposed branches or in the open, within hanging vines.

We have not observed the species to join mixed-species feeding flocks, but have consistently found the species within the same small area, over the course of several years, suggesting that it may have well-defined permanent territories. We have observed the same phenomenon in *H. furcatus* and *H. orbitatum*.

During the April 1997 and July 2000 observations, birds did not usually react very strongly to playback, at most approaching cautiously but keeping within the forest.

### Breeding biology

No information has previously been recorded concerning the nesting ecology of the species. On 29 October 1998, while watching a pair of *H. kaempferi*, Travis McClendon drew G.M.K.'s attention to a previously unseen nest. It soon became apparent that the pair was actively nest-building, both members visiting the structure at regular intervals (approximately one visit every 2–5 minutes) to add new items.

The nest was wrapped around a horizontal branch c. 6 m above the ground and was moderately well concealed by nearby leaves. It was c. 45 cm in overall length and situated within 15 cm of the main trunk of a narrow-trunked tree (c. 18 m tall with a dbh of c. 10 cm). It was principally constructed of live mosses (c. 70%) up to 8 cm long with most of the remainder being grasses and dead leaves (up to c. 2 cm long and 1 cm wide) and appeared likely to be an elongated cup-shape when completed. It was not possible to obtain additional measurements, e.g. the diameter of the cup. The nest was located 2–3 m inside primary forest at an altitude of 250 m. Most surrounding trees were of similar height and structure. The forest in this vicinity is on relatively level ground (slope angle less than 5°) and the understorey moderately dense, but usually less than 25 cm in height.

### Vocalizations

The usual vocalization consisted of a short series, often of four notes in two pairs or three more regularly spaced notes, which although variable in length, was always delivered at the same, rather even, pace. A single note sometimes preceded the main call. Each call was high-pitched, nasal, strident and raspy “kuít-

kuít" or "kwit-kwit", sometimes given as "kwit kwit-kwit kwit-kwit-kwit-kwit", not dissimilar to the "Hwik. . .Hwik-Hwik. . .Hwik-Hwik-Hwik-Hwik" given by *Hemitriccus orbitatus*. Calling was heard throughout the day, but more frequently in the early morning. A typical series of calls is shown in Figure 1, consisting of rather spaced pairs of notes reaching just over 6 kHz. A series of 7–14 notes, delivered at a continuous pace, is believed to represent the song. Relatively similar in quality to calls, but seemingly lower pitched (the main component reaching 5 kHz;  $n = 2$ ). Figure 2 shows one such series of 10 notes.

### Plumage description

The only description available in the literature for this species is that included by Ridgely and Tudor (1994) and we therefore take this opportunity to present a more detailed plumage description. Head and face vary from pale brown tinged rufous to more brownish-olive, apparently dependent on lighting conditions, or perhaps due to the relative freshness of the plumage. The eye-ring is usually relatively weak, but appears more pronounced and whiter, and therefore a little reminiscent of *H. orbitatus* in some individuals (e.g. one of the nest-building pair observed in late October 1998) and also varies in prominence according to the angle of the bird's head relative to the observer. There is small greyish-buff or dull rust (M.P.) loreal spot, which is less noticeable in direct or bright sunlight, but is highly noticeable in even light or in shade. A slight dusky smudge is sometimes present at the rear of the ear coverts (J.T.). The rest of the upperparts, including tail, are dull olive-green (considered brighter olive by M.P.). The throat is pale yellow, usually tinged with buff but occasionally duller, also depending on the light conditions; notably the breast is washed greenish-olive, while the rest of the underparts are pale greenish-yellow, grading to pale yellow on the vent and whitish undertail-coverts. The wings are dark, with the secondaries fringed greenish-yellow, forming a slight wing-panel, and extremely broad and bold yellowish-cream fringes to the tertials. The two concealed wing bars are yellowish-buff in coloration. The outer pair of rectrices are slightly elongated and curve outwards, producing a slightly forked appearance, with the outer webs yellowish-cream and a dark subterminal band, although the shape may be variable. This pattern (and head coloration) is similar to *H. furcatus*, and may suggest a closer relationship between the two than heretofore realised. Indeed, the larger *H. mirandae*, with which it is usually presumed to form a superspecies, appears more closely related, on morphological characters, to the *H. diops* and *H. orbitatus* group.

The underwing-coverts are pale greenish-yellow. Bare parts: dark grey tarsi, blackish bill with an extensive pale basal two-thirds to the lower mandible, and a brown or warm fawn-brown iris. It is worth noting that *H. orbitatus* has been observed at both Salto do Piraí and nearby Joinville and could potentially cause confusion. It is, however, easily separated by its well-defined and conspicuous white eye-ring and slightly different call.

### Ornithological importance of Salto do Piraí

Wege and Long (1995) note the occurrence of four additional species of globally threatened birds at the type-locality of *H. kaempferi*, making it potentially the

<i>Analysis parameters</i>			
<b>Window:</b>	Hamming	<b>FFT (Hz):</b>	512
		<b>Frame (%):</b>	100
		<b>Overlap (%):</b>	50
<i>Recording data</i>			
<b>NSA ref. no:</b>		<b>Date:</b>	
<b>Species name:</b>	He. kaempferi	<b>Location:</b>	Brazil 1997
		<b>Sound:</b>	
		<b>Recordist:</b>	J. Mazar Barnett

↑ frequency (kiloHertz)  
 → time (seconds)

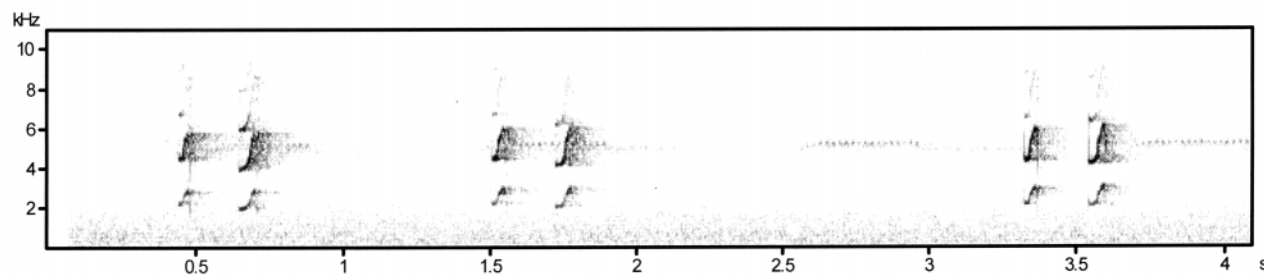


Figure 1. Sonogram of spaced calls of *Hemitriccus kaempferi* (Brazil: Salto do Piraí; J. Mazar Barnett recording). Prepared with Avisoft programme at the British Library National Sound Archive.

<i>Analysis parameters</i>			
Window:	Hamming	FFT (Hz):	512
		Frame (%):	100
		Overlap (%):	50
<i>Recording data</i>			
NSA ref. no:		Date:	
Species name:	He. kaempferi	Location:	Brazil 1997
		Recordist:	J. Mazar Barnett

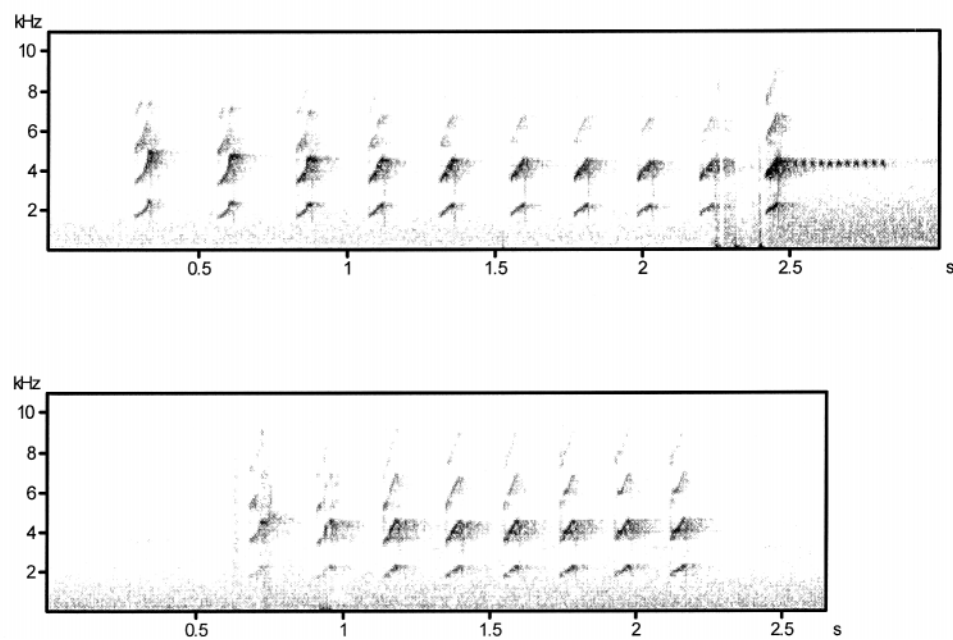


Figure 2. Presumed song of *Hemitriccus kaempferi* (Brazil: Salto do Pirai; J. Mazar Barnett recording). Note the trill commencing at 2.5 seconds is a frog. Prepared with Avisoft programme at the British Library National Sound Archive.

most important site in the state for the conservation of threatened birds, namely White-necked Hawk *Leucopternis lacernulata*, São Paulo Tyrannulet *Phylloscartes paulistus*, Russet-winged Spadebill *Platyrrinchus leucoryphus* and Pampas Meadowlark *Sturnella defilippii*. Of these, *Leucopternis lacernulata* has been recorded twice (in July 1991 and April 1997), *Platyrrinchus leucoryphus* and *Sturnella defilippii* have been recorded on just single occasions. The group of 35 *S. defilippii*, noted in fields between Vila Nova and Salto do Piraí, in July 1991 (M.P.) appears to be the only state record (Rosário 1996). *Phylloscartes paulistus* has been recorded five times, in June 1929, July 1991, March 1994, October 1995 and October 1998 (Wege and Long 1995, Rosário 1996, Naka *et al.* in press) and is probably not uncommon in the area. In addition, Machado (1996) recorded Blue-bellied Parrot *Tricharia malachitacea* within the reserve.

Our fieldwork in the area has revealed the presence of other species of conservation concern. The globally threatened Salvadori's Myrmotherula *Myrmotherula minor* (two on 3 October 1995) and Unicolored Antwrens *M. unicolor* (two on 3 October 1995, four on 4 October 1995, three on 9 April 1997 and one on 29 October 1998) are both present at the locality (Naka *et al.* in press).

In addition, L.N.N. recorded the globally threatened Helmeted Woodpecker *Dryocopus galeatus* at Reserva Particular do Patrimônio Natural de Ponta Velha, Itapoá, on 15 October 1998 (two birds) (Naka *et al.* in press). Given the brief nature of our fieldwork in both areas, further discoveries are likely.

### Conservation

Kaempfer's Tody-tyrant is protected by Brazilian law (Bernardes *et al.* 1990, Paiva 1999), having been considered endangered by Collar *et al.* (1994) and included within the Brazilian Red Data list (Paiva 1999). Previously, Collar *et al.* (1992) had considered the species as having an Indeterminate threat status, i.e. a taxon known to be either Endangered, Vulnerable or Rare, but for which so little information is available it is impossible to designate more accurately the most appropriate threat category. Ridgely and Tudor (1994) and Collar *et al.* (1992) suggest that the species is partially protected by the Reserva Ecológica do Bracinho, Salto do Piraí, but no records are known from within this reserve, despite extensive mist-netting work there (Machado 1996), and specific searches during three visits by M.A. Da-Ré (pers. comm.) in 1987. The reserve principally encompasses lower montane, montane and uppermontane evergreen forest on steep slopes and as such there appears to be no suitable habitat for Kaempfer's Tody-tyrant. The lowland evergreen forests in the area – presumably the original habitat of the species – have virtually all been removed or, at best, highly modified by man's activities. As the species seems restricted to the flatter bottom of the small Piraí valley, most habitat at the site is not suitable. The area of secondary forest in the base of the valley is diminishing in extent to make way for housing, pasture and plantations of banana and palmito. While these habitats are unsuitable for the species, it can persist in second growth and edge, even being recorded in nearby gardens at Salto do Piraí, offering some hope for its survival. The possibility of annexing valley bottom secondary growth to the Reserva Ecológica do Bracinho should be investigated. All our visits to the area were of short duration and concentrated on the access road to the power station. However, the



rest of the surrounding lowlands, although heavily converted, could potentially hold small numbers of the species and these should be surveyed as soon as possible. A low forested hillside on the outskirts of Joinville was visited in October 1995, but only *H. orbitatus* was found. Further destruction of remnant lowland evergreen forest fragments in the region should be minimized.

The additional locality for the species, discovered by L.N.N. – Reserva Particular do Patrimônio Natural de Ponta Velha, Itapoá – was created to protect one of the last remnants of lowland evergreen forest in Santa Catarina. The fact that Kaempfer's Tody-tyrant was located here permits hope that this rare and localized endemic may be protected within this area, although it also raises concerns for the future of the species, as lowland evergreen forest must be considered the most endangered habitat in Santa Catarina. The recognition of Reserva Ponta Velha as a new Key Area and surveys to estimate the extent to which this reserve protects a population of the species are also essential, as this is the only locality where the species is actually protected.

The reserve is very close to the border with Paraná and it is highly likely that *H. kaempferi* will be found in adjacent areas of similar habitat. However, neighbouring lowland areas are heavily disturbed, mostly being converted to banana and rice plantations. Thus, future field work should probably focus on northern Santa Catarina, around the Reserva Particular do Patrimônio Natural de Ponta Velha, where some significant tracts of lowland evergreen forest persist. These areas are also critically threatened, as Itapoá is swiftly developing as a beach resort for wealthy Brazilians and the demand for virgin land is constantly increasing.

The other historical locality where the species is known, Brusque (Teixeira *et al.* 1991), has not been visited subsequently. It would appear opportune to check the state of the habitat at this locality since, as noted above, the Kaempfer's Tody-tyrant survives in degraded areas.

We recommend the initiation of more concentrated ornithological sampling at these and other suitable sites in northern Santa Catarina and southern Paraná. Our fieldwork has been based solely on casual observations, rather than thorough surveys of the two areas. It is essential to initiate regular surveys in and around these localities, as well as at Brusque and adjacent areas of Paraná. Despite our data, still virtually nothing is known of the species in life, and future conservation initiatives would benefit from fieldwork designed to estimate approximate numbers and areas of occurrence, as well as to identify specific habitat preferences, in order to construct management plans that will protect the species's habitat. In light of the near total destruction of lowland forest, regrowth should be encouraged on properties adjacent to foothill forest.

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