

Intergradation between Lemon-breasted Flycatcher *Microeca flavigaster* Gould and Brown-tailed Flycatcher *Microeca tormenti* Mathews in Cambridge Gulf, Western Australia

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Abstract

The mangroves of Cambridge Gulf, Western Australia, are inhabited by flycatchers intermediate between *Microeca flavigaster* and *M. tormenti*. In recent times these have been treated as separate species because of fairly pronounced differences in coloration and to a lesser extent habitat preferences. *M. flavigaster* occurs in a wide variety of woodlands and forests, including mangroves, whereas *M. tormenti* is confined to mangroves. It is now shown that these birds are conspecific.

Introduction

Until recently there were only three records of *Microeca flavigaster* for Western Australia. Mr C.F.H. Jenkins collected a specimen and observed several pairs along the banks of the Ord River at Ivanhoe Station in 1944. Mr I.C. Carnaby observed one or two pairs in semi-jungle on the lower Ord River (about 60 km SE of Wyndham) in 1965 and 1966. Mr R.P. Jaensch saw two birds with bright lemon bellies in a tree thicket at Parry Creek (about 23 km SE of Wyndham) on 16 March 1983.

On the other hand *M. tormenti* was known from many specimens and observations throughout its range which Storr (1980) gave as north-west and west coasts, from Napier Broome Bay (Pago) south-west to Barred Creek (40 km N of Broome) also continental islands Bigge, Boongaree and Augustus (Figure 1).

The known ranges of *M. flavigaster* and *M. tormenti* were thus separated by a gap of 260 km. Because *M. tormenti* was confined to extensive blocks of mangrove forest, favouring mixed forest of *Rhizophora*, *Bruguiera*, *Avicennia* and *Aegiceras*, it was considered doubtful that it would occur east of Cape Londonderry, as the coast from there to Cape Dussejour at the western head of Cambridge Gulf is mainly rocky with only small isolated patches of mangroves. These small patches appeared unsuitable for *M. tormenti* even though it is occasionally found in lower vegetation.

Throughout its fairly extensive range *M. tormenti* underwent no geographic variation, i.e. the northeastern-most specimens showed no tendency towards *M. flavigaster*, similarly the western-most specimens of *M. flavigaster* showed no tendency towards *M. tormenti*.

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Whether *M. tormenti* was a subspecies of *M. flavigaster* or a full species, seemed likely to remain a matter of opinion. How important was the lack of yellow on the under surface of *M. tormenti*, and how important was its restricted habitat preferences?

Parker (1973) adopted the suggestion of Mayr and Serventy (1944) and Vaurie (1953) that *tormenti* and *flavigaster* should be regarded as conspecific. He also added that investigation was needed between Napier Broome Bay and Carlton Reach to see if their ranges did meet.

This enigma was resolved in October 1982 when a survey of the Cambridge Gulf mangroves was carried out by the Department of Fisheries and Wildlife and the Western Australian Museum. Six *Microeca* specimens (4♂ 2♀) collected from three different locations within the Gulf proved to be intermediate between *M. flavigaster* and *M. tormenti*.

These specimens were compared with material from the Australian National Wildlife Collection and the Western Australian Museum. The following measurements were taken: length of chord of flattened wing, length of tail (along a central rectrix), length of tarsus, length of entire culmen and width of culmen.

Morphological Variation

Descriptions are given below for *M. flavigaster* (from W.A. and N.T.), *M. tormenti* and the six Cambridge Gulf specimens (the latter starting with those having the least yellow on their under parts).

Microeca flavigaster

Head and nape dull olive-green; back, rump and wing coverts olive-green; wings greyish-brown, the outer fringe of the primaries and secondaries yellowish-white; tail coverts dull olive-green; tail brown, outer fringe of many feathers olive-green; throat white; breast yellow; sides of breast and flanks olive-grey; belly bright yellow; undertail coverts yellow; bend of wing and underwing coverts yellow.

Unfeathered parts: iris brown or dark brown; upper mandible black; lower mandible dark brown with black tip; mouth yellow; legs slate grey, black or purplish brown.

Specimens Examined: WAM A550, A551, A552, CSIRO 6362, 14766, 15912, 16302, 14105, 6367, 6287, 18811, 16015.

Microeca tormenti

Head and nape grey; back, rump and wing coverts brown tinged with olive; wings greyish-brown, the outer fringe of primaries and secondaries dull white; tail coverts greyish-brown; tail brown, outer fringe of some feathers white; throat white; breast white; sides of breast and flanks grey; belly and undertail coverts white; bend of wing and underwing coverts white tinged yellow.

Unfeathered parts: iris dark brown (5), brown (4), red-brown (2), grey-brown (1); upper mandible black or brown; lower mandible pale horn or brown with a dark tip; mouth yellow; legs black (9), brownish-black (2), dark grey (1).

Specimens Examined: WAM A14774, A14773, A11597, A14775, A15097, A15009, A15010, A12627, A12626, A14677, A14023, A14022.



Figure 1 Map of Northern Territory and Kimberley, Western Australia, showing distribution of *Microeca f. flavigaster* (hollow circles), *M. f. tormenti* (solid circles), and intermediate specimens.

Table 1 Measurements (mm) of *Microeca flavigaster* with means and sample size in parentheses.

		Wing	Culmen length	Culmen width	Tail	Tarsus
<i>Microeca flavigaster flavigaster</i>	♂ (N7)	72-76 (73.7)	12.0-14.0 (13.4)	5.3-5.8 (5.6)	49-53 (51.4)	14.0-15.0 (14.5)
W.A. and N.T.	♀ (N6)	67-72 (69.6)	12.5-14.0 (13.1)	5.0-5.8 (5.4)	49-51 (49.6)	13.0-15.0 (14.1)
<i>M. flavigaster x tormenti</i>	♂ (N4)	73-76 (74.2)	14.0-14.5 (14.1)	5.1-5.8 (5.6)	51-55 (52.7)	15.0-15.5 (15.1)
Cambridge Gulf	♀ (N2)	72-73	14.0-14.5	5.5-5.9	51-53	14.5-15.0
<i>M. flavigaster tormenti</i>	♂ (N7)	74.75 (74.4)	14.0-15.0 (14.5)	5.3-5.8 (5.5)	51-56 (53.8)	14.0-18.0 (15.7)
W.A.	♀ (N4)	70-74 (71.2)	14.0-14.0 (14.0)	5.4-5.7 (5.5)	50.54 (51.7)	13.0-16.0 (15.0)

Cambridge Gulf Specimens

WAM A17645 adult female (skull fully ossified, ovary with one developing egg follicle) collected near Black Cliff Point on 12 October 1982 at outer edge of *Rhizophora* forest with some dead *Rhizophora* and *Avicennia*.

Head and nape dark grey; back brown with faint tinge of olive; rump brown tinged olive; wings greyish-brown, the outer fringe of primaries and secondaries white; tail coverts greyish-brown; tail dark brown; throat white; breast white tinged with yellow; sides of breast and flanks grey; belly white, tinged with yellow; undertail coverts white; bend of wing and underwing coverts white tinged with yellow.

Unfeathered parts; iris dark brown; upper mandible blackish-brown; lower mandible bone with blackish-brown tip; mouth yellowish; legs black.

Very like *M. tormenti*, but head darker and back and rump less olive.

WAM A17642 adult male (testes enlarged, 7×6 mm) collected near Black Cliff Point on 11 October 1982 at landward edge of *Rhizophora* forest.

Head and nape grey; back and wing coverts brown tinged olive; rump olive; wings greyish-brown; the outer fringe of primaries and secondaries white; tail coverts brown tinged olive; tail dark brown; throat white; breast whitish-grey; sides of breast and flanks grey tinged yellow; belly white with yellow tinge (strongest at midline); vent and undertail coverts white; bend of wing and underwing coverts white tinged with yellow.

Unfeathered parts: same as for A17645 except for brown legs.

Very like *M. tormenti* but slightly more olive on back and rump and having a yellowish tinge to breast and belly.

WAM A17796 adult male (testes 6×3 mm) collected 3 km south of Hardman Point on 12 October 1982 in *Rhizophora* forest.

Head and nape grey; back, rump and wing coverts olive; wings greyish-brown, the outer fringe of primaries and secondaries white; tail coverts greyish-brown; tail brown; throat white; breast white tinged yellow; sides of breast and flanks pale greyish-white tinged yellow; belly white tinged yellow; undertail coverts white with faint yellow tinge; bend of wing and underwing coverts white tinged yellow.

Unfeathered parts: same as A17645.

Fairly similar to *M. tormenti* but upper parts more olive and under parts more yellowish.

WAM A17643 adult male (testes 5.0×3.5 mm) collected near Black Cliff Point on 12 October 1982 in *Rhizophora* forest.

Head and nape grey; back, rump and wing coverts olive; wings greyish-brown, the outer fringe of the primaries and secondaries white; tail coverts greyish-brown; tail dark brown; throat white; breast greyish-white tinged with yellow; sides of breast and flanks greyish-white tinged yellow; belly white with strong yellow tinge; undertail coverts white tinged yellow; bend of wing and underwing coverts yellowish-white.

Unfeathered parts, similar to A17645 except for grey-brown legs.

Almost exactly intermediate.

WAM A17641 adult male (testes 6×3 and 5×3 mm) collected 7 km NNE of Mount Connection on 9 October 1982 in thicket of *Avicennia*, *Excoecaria* and *Ceriops* at edge of tidal creek.

Head and nape brownish olive; back, rump and wing coverts olive; wings greyish-brown, the outer fringe of primaries and secondaries yellowish-white; tail coverts greyish-brown;

tail dark brown; throat white; breast dull yellowish-grey, darker on sides of breast; belly pale yellow; undertail coverts yellow; bend of wing and underwing coverts yellowish-white.

Unfeathered parts as in A17645 except for grey legs.

Fairly similar to *M. flavigaster* but has less olive on head and back and less yellow on under parts.

WAM A17644 adult female collected near Black Cliff Point on 12 October 1982 on landward side of *Rhizophora* forest.

Head and nape greyish-olive; back, rump and wing coverts olive; wings greyish-brown, the outer fringe of primaries and secondaries yellowish-white; tail coverts greyish-brown; tail dark brown; throat white; breast greyish-yellow, darker on sides; belly pale yellow; undertail coverts white tinged yellow; bend of wing and underwing coverts yellowish-white.

Unfeathered parts, same as A17645.

Very like *M. flavigaster* but slightly darker on upper parts including tail and less yellow on under parts.

Discussion

The six Cambridge Gulf specimens were collected in what I consider to be typical *M. tormenti* habitat, i.e. mangrove forest with scattered dead trees. Nearly all the birds were calling from the canopy, and judging from their behaviour and gonads they were preparing to breed. Three different calls were noted: a short 'peter peter' and 'treet treet' and a longer 'pa-tree-ter' repeated three or four times. I have heard similar calls from *M. tormenti* and also a sharper 'k'chip'.

The main differences between *M. tormenti* and *M. flavigaster* are the colour of the head and nape (grey in *tormenti*, olive-green in *flavigaster*), the back and tail (more brown in *tormenti*, more olive in *flavigaster*) and breast and belly (almost pure grey and white in *tormenti*, yellow in *flavigaster*). The characters break down in the Cambridge Gulf series, the specimens showing a wide range of intermediacy, with A17645 at one end close to *M. tormenti* and A17644 at the other end close to *M. flavigaster*.

On the basis of these data, it is considered that the Brown-tailed Flycatcher should now be called *Microeca flavigaster tormenti*.

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