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NOTES ON FLYCATCHERS OF GENUS BATIS

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The genus *Batis* comprises a group of small African flycatchers, some of which are puzzlingly similar. The males of some species are so much alike that taxonomy must be worked out with the females. Not only are some species so similar that they would be considered subspecies (and have been in some cases) if their ranges did not overlap, but the ranges are sometimes nearly mutually exclusive, with only a narrow overlap—a further indication of close relationship.

Material is lacking for a complete review of the group, but specimens from East Africa in Chicago Natural History Museum, augmented by the splendid van Someren material and the specimens lent by the American Museum of Natural History through the kindness of Dr. James P. Chapin, allow some conclusions to be drawn that help elucidate certain points in the species *minor*, *molitor*, *perkeo*, and *soror*.

Batis minor Erlanger

Sclater (1930, pp. 422, 423) recognized seven races of this species, including, from eastern Africa: *minor*, *erlangeri*, *suahelicus*, and *nyanzae*. Friedmann (1937, p. 238) also recognizes the same four races and gives their characters. Mackworth-Praed and Grant (1940, pp. 737–738) review the species and recognize only *minor*, *erlangeri* and *suahelicus*, apparently synonymizing *nyanzae* with *erlangeri*. The western races are not considered here. A review of our material, listed below with measurements, supports Sclater's and Friedmann's treatment. These races are not sharply different and if one were to merge *erlangeri* and *nyanzae*, one would have to consider merging *suahelicus* with *minor*, and, using size alone, recognize a coastal and an interior race. However, color

differences do exist between certain races, and it seems advisable to recognize four races:

1. **Batis minor minor** Erlanger

The smallest race.

Serenli, mid-Juba River, 3 males, 1 female, 1 female immature.

Wing: males 52, 53, 54; female 52; female immature 52 mm.

2. **Batis minor suahelicus** Neumann

This is the next largest race, and compared with *minor* there are no apparent differences in color. This race is usually compared with *erlangeri* or *nyanzae*, but should be compared first with *minor*, of which it is the southern representative. Morogoro area birds were referred to *nyanzae* by Sclater (1930, p. 422) but to *suahelicus* by Friedmann (1937, p. 238). Our birds agree better with *suahelicus*, supporting Friedmann's conclusions. This is a weak race and in any lumping in the group should be one of the first to be eliminated, by uniting it with *minor*.

Kenya: Changamwe, 1 male, 1 female; Rabai, 3 males, 1 female; Samburu, 1 male, 1 female; Shimba Hills, 1 female.

Tanganyika Territory: Moshi, 1 female; Usambara, 1 female; Morogoro, 1 male, 2 females.

Wing: Kenya, males 54, 55, 55, 56, 56, 57; females 53, 54, 56, 56; Tanganyika, male 56; females 56, 57, 57, 58 mm.

3. **Batis minor erlangeri** Neumann

A larger race again, and a western representative of *minor*. Compared with the preceding races it is slightly larger and the only color difference seems to be in the breast band of the female, which is darker rufous brown. The breast band in both sexes also appears slightly wider.

Abyssinia: Gojjam, 3 males; Arusi, 1 male; Galla, 3 females; Addis Ababa, 1 female.

Wing: males 59, 62, 63, 66; females 61, 63, 63, 65 mm.

4. **Batis minor nyanzae** Neumann

A large race, but not reaching the extreme of *erlangeri*. Compared with all three preceding races the male has the crown more intensely black, and the female has the back tinged with olive; the breast band is about the same width as in *erlangeri*, but in the female its color is slightly paler, though not as much so as in *minor*

and *suahelicus*. It is a fairly well-marked race, and I can not follow Mackworth-Praed and Grant in not recognizing it.

Uganda: Butiaba Port, 1 male, 1 female; Atiak, 1 female; Sironko River, 1 male; Mangiki, 1 female; Entebbe, 1 male; Kabale, 1 male.

Kenya: Kisumu, 1 female; Kendu Bay, 1 female.

Wing: males 60, 60, 61, 62; females 57, 58, 60, 62, 62, 63 mm.

To complete the distributional picture the other three races, from Sclater, are listed:

5. **Batis minor congoensis** Neumann

Eastern Cameroon, Lower Congo Valley, Portuguese Congo, and northern Angola.

6. **Batis minor chadensis** Alexander

Northern Nigeria and Lake Chad to Blue Nile and Red Sea Province of the Sudan. Mackworth-Praed and Grant (1940, p. 737) divide this subspecies into two races and put them with the species *B. orientalis*.

7. **Batis minor batesi** Bannerman

The highlands of the Cameroon–Nigeria border.

Batis molitor Hahn and Küst

The main questions to be considered are: (1) the limits of the species (i.e., is *soror* to be included?); (2) geographical variation, involving the validity of the race *puella*, and the validity, name, and range of the race from coastal Kenya.

Sclater (1930, p. 421) considered *soror* a race of *molitor*, as did Vincent (1934, p. 92), Friedmann (1937, p. 236), and Mackworth-Praed and Grant (1940, p. 736). On the other hand, van Someren (1932, p. 297) reiterates his opinion, with evidence, that *soror* is not conspecific with *molitor;* and Moreau (1940, p. 76) records one male and two female *soror* and one male *molitor* from Mafia, and says these records cut across the conclusions of Vincent's recent review. White (1946, p. 84) also makes the statement, without evidence, that *molitor* and *soror* are species.

The reasons for considering *soror* a race of *molitor* seem to be that their ranges are largely representative and their similarities are great. In a group of birds with species as closely similar as this—as witness *orientalis*, *perkeo*, and *molitor*—such relationship

is not enough, and intergradation should be demonstrated. Vincent (1934) has indicated that the ranges of *soror* and *molitor* overlap, and states that intergradation occurs in Zambezi, near Tete, Zomba, and in East Goya.

This appears conclusive, but it is at variance with my conclusions, based on specimens from eastern Kenya and northeastern Tanganyika. Re-reading Vincent's paper, I find that his data can be interpreted differently, and that they then agree with my new data and my conclusions.

First, it must be pointed out that *molitor*, characterized in the female by a distinct, dark breast band, a distinct chin spot, conspicuous black and white in the lower back, and contrasting black flecks in the lateral breast feathers, extends practically to the coast in Kenya (see p. 141, under *mystica*) and that from Eldoma Ravine eastward it progressively decreases in size, until in the Maungu area in southeastern Kenya it is almost as small as *soror*.

Secondly, that in our material are female specimens of *soror* from eastern Kenya, as far north as Kipini, characterized by a very pale breast band and chin spot, less contrasting white and dusky in lower back and rump, dusky rather than black tipping in the lateral breast feathers, and grayer crown and upper parts, and these specimens show no tendency toward intergrading with *molitor*, though approaching it in size.

Thus, we have female *molitor* from Maungu and Maktau in extreme southeastern Kenya, and female *soror* from nearby Shimba Hills, Sokoke, and Kipini, each typical in color, with no tendency toward intergradation. Since *molitor* and *soror* have such a wide range otherwise, with only minor variation in color, and both occur in extreme southeastern Kenya (apparently not in the same places, but very close to each other) without intergradation in color, it seems advisable to regard them as species. The case recalls *perkeo* and *orientalis*, two very similar species, that overlap for only a small part of their range in Abyssinia, and that have been at times erroneously considered subspecies.

In view of these data and conclusions, it is possible to re-evaluate Vincent's data. Vincent shows that there are small coastal birds, larger birds from the interior, and intermediate-sized birds from intermediate localities in the interior Mozambique area. This is inconclusive without taking account of color and applies also to my Kenya bird. In regard to color, Vincent says, "There seems to be no significance in the dark coloration of the throat-spot and

pectoral band of the female birds. Near Tete, for instance, there are birds with all the dark chestnut color of *molitor*, yet with the smaller measurements of the pale *soror*." It would seem that dark *molitor* in the Mozambique area also decreases in size eastward. Vincent's data, as given, can be interpreted as correlating with my conclusions that *soror* and *molitor* are two separate species.

The factors involved in the geographical variation are size; general color of upper parts; width of the breast band; color of breast band and chin spot in the female; and development of the superciliary.

The table on this page shows the wing length. The main points are the large size of Angola birds, the smaller size of the

WING MEASUREMENTS

	Male mm.	Female mm.
	Batis molitor molitor	
Natal and Transvaal	60, 60, 62, 63, 64	59, 59, 60, 61
Bechuanaland	58, 58, 59, 60, 61	56, 58, 58, 60, 60, 61, 61, 64
	Batis molitor puella	
Moyen Congo	.....	63
Angola	65, 66, 66	..
Uganda	60, 62, 62	60, 60, 62
Western Kenya east to Mara River, Lake Naivasha and Laikipia	(11) 62–64 (av. 62.5)	(14) 59–63 (av. 60.9)
Mount Kenya area	62	58, 59, 59, 60
Mount Kilimanjaro area:		
Ol Doinyo Erok	60, 61	60, 61, 61
Kilimanjaro	59, 61	60
Moshi	.....	57
	Batis molitor mystica	
Eastern Kenya: (Nairobi area to coast along railroad)		
Nairobi area	59, 59, 60, 60	57, 57, 58
Thika River	61	..
Ngong	60	..
Machakos	60	..
Kiu	..	59
Simba	57, 60	56, 57
Makindu	..	57
Kibwezi	57	..
Maktau	..	56
Maungu	57, 59	54, 56
Samburu	56	..

geographically adjacent Bechuanaland birds, and the somewhat greater size again of Natal and Transvaal birds. In eastern Kenya, there is also a decrease in size in specimens from the eastern edge of the range. Vincent's 1934 data indicate that the size may decrease in the interior Mozambique area, also.

In the color of the upper parts, the birds from Kenya, Uganda, Moyen Congo, and Angola, with few exceptions, are darker gray on the back and crown, with more black in the back, than specimens from Natal, Transvaal, Southern Rhodesia, and Bechuanaland. Bechuanaland birds are slightly paler above than Transvaal and Natal birds.

In the females the breast band and chin spot are darker rufous in the more northern birds with darker upper parts. In both sexes the darker birds appear to have a slightly narrower breast band, though this is a character difficult to evaluate when comparing skins of various makes.

The white loral spot is usually continued back only to above the front of the eye, but in occasional specimens there is a faint white superciliary to the nape, and in two populations it is pronounced: in the Maungu area in Kenya where all specimens have it, and in the Bechuanaland area, where it is usually present.

The question of the number of subspecific names to use in discussing this variation arises. One extreme would be to divide the population into six groups, with a name for each: (1) the larger, pale, South African birds; (2) the smaller, paler, Bechuanaland birds with more of a tendency for an eye stripe; (3) the darker birds with narrower breast bands, of Uganda and interior Kenya; (4) the similar but larger, Angola bird; (5) the similar but smaller, eastern Kenya birds; and (6) the extreme eastern Kenya birds (Maungu, etc.) that are dark, smallest, and with a pronounced superciliary.

However, such very fine splitting seems unwarranted as a means of indicating what seem to be in part very local trends. There are three widespread types of variation, covering considerable areas, for which it seems names will be useful: the pale, southern birds; the darker, northern birds; and the smaller birds on the eastern part of the range. These are: *Batis molitor molitor, puella,* and *mystica.*

Batis molitor molitor Hahn and Küst

Muscicapa molitor Hahn and Küst, 1850, Vog. aus Asien . . . . , **20**, pl. 2—type locality, Kaffirland.

Measurements.—See Table.

Range.—Natal, Transvaal, eastern Southern Rhodesia (Bulawayo), and Bechuanaland; Sclater (1930, p. 421) also includes East Cape Province and Damaraland.

Remarks.—The noteworthy variation in this series is in the paler color and smaller size of certain Bechuanaland birds. In the Bechuanaland females, five of the eight are slightly paler than six of the seven other South African females (Natal, Transvaal), and in series this paleness is pronounced; seven of the eight Bechuanaland females have a moderate to well-developed superciliary, while only one of the seven other South African birds has such a well-developed superciliary. In color of breast band, however, there is little difference. The females from Tsatsaraga are especially small (56, 58, 58, 61 mm.), while those from Ksane, Gabane, Zimbabwe and Kabulabula average larger (60, 60, 61, 64 mm.). Other South African females measure 59–62 mm. The Tsatsaraga males are also small (58, 58, 59, 61 mm.), and one of them has a fairly well-developed white superciliary, only indicated in a few of the other South African males.

In characters, these small Bechuanaland birds show more of an approach to the East African species *Batis soror* than do the populations of *B. molitor*, which are found closer to *soror*'s range.

The question arises as to the advisability of describing these Bechuanaland birds as a separate race. However, as the females have the paler breast band and chin spot of the female *B. m. molitor* and the plentiful white edgings on the remiges of that race, and as the grayer upper parts that help distinguish *molitor* from *puella* are still more evident, while the white superciliary also crops up in a population of *puella*, and the average smaller size is not diagnostic, it seems advisable to include Bechuanaland birds in *B. m. molitor*.

Batis molitor puella Reichenow

Batis puella Reichenow, 1893, Jahrb. Hamb. Wissens. Anst., **10**, (1), p. 125 —type locality, Bussisi, south shore of Lake Victoria Nyanza.

Diagnosis.—Similar to *B. m. molitor* in size, but the upper parts have more slate and blackish in the crown and back, especially in the male; the remiges have less conspicuous white edgings; and in the female the breast band and throat patch are considerably darker rufous. The breast band may average narrower in the male, but it is a difficult character to evaluate in various makes of skin.

Range.—Specimens examined from the Mount Kilimanjaro area, interior Kenya east to Ol Doinyo Erok, Lake Naivasha, the Mount Kenya area and north to the Mount Elgon area; Uganda to Ruwenzori; Angola; and Moyen Congo (one specimen). Sclater (1930, p. 421) and Friedmann (1937) give the range as through interior Tanganyika to Lake Nyasa, the Katanga, northern Rhodesia, the upper Zambesia and Angola. The Moyen Congo specimen apparently extends the range.

Measurements.—See Table.

Remarks.—This race has been widely recognized until recently; i.e., by Sclater (1930, p. 421), Friedmann (1937, p. 236) and Jackson and Sclater (1938, p. 925). Vincent, however, in his revision of the species (1934) was unable to recognize *puella*, and Mackworth-Praed and Grant (1940, p. 736) accepted this finding.

The characters given by Reichenow (1902–1903, p. 484) as distinguishing the female from that of *molitor* were smaller size, much darker red-brown breast band and throat patch, and the usually more pronounced superciliary. Neumann (1907, p. 356) used as characters the narrower breast band in both sexes, and the paler breast band and chin spot of the female. Friedmann used only the following characters: male *puella* with a slightly narrower breast band; female with breast band and throat spot darker.

On present material, most Kenya and Uganda birds are clearly and easily separated from most Natal, Transvaal, and Bechuanaland birds. As a quick test I mixed the nine males of the former with the eleven males of the latter, and, without looking at the labels, I identified correctly, at a glance, considering only the color of the crown and back, all the South African birds and eight of the nine East African birds. Doing the same with the females, and using the color of the breast band alone, I correctly identified, at a glance, thirteen out of sixteen South African *molitor* and twenty-three out of twenty-five East African *puella*.

The above test indicates individual variation in the characters concerned. In addition, two East African males (from Uganda) have a fairly well-marked, but narrow superciliary line. Two, (both from Ol Doinyo Erok) are very pale gray above, recalling the pale male of *mystica* from Maungu and also the paler gray *B. m. molitor*. Some females have no white line over the eye, but in about half the specimens it is at least indicated, being thus more frequent than in the male.

I have only three adult males from Angola; if one considers only the dark upper parts mixed with much black on the back, they compare much better with Kenya-Uganda *puella* than with *molitor*. The single specimen (female) from the Moyen Congo has the characteristic dark upper parts of this race. The Kilimanjaro bird (*Batis molitor montana* Sjöstedt, 1908, Kilimanjaro-Meru Expedition, **3**: 109—type locality Kilimanjaro, 6,000 feet) compared with *puella* was said to be larger (wing 63) and the female darker above. Gyldenstolpe (1924, p. 210) has re-examined this specimen and was unable to find any differences between supposed *B. molitor montana* and *puella* from various parts of Kenya, and regards *montana* as a synonym of *puella*, where it seems to belong.

Batis molitor mystica Neumann

Batis mystica Neumann, 1907, Jour. Orn., **55**: 594—type locality Kikumbuliu, between Kibwesi and Tsavo, Kenya.

Diagnosis.—Like *puella* in color and pattern but smaller in size. This includes two populations at least, one with conspicuous white superciliaries and one without (see below).

Measurements.—See Table.

Range.—Specimens examined from Kenya, from Maungu area (inland from Mombasa) inland to the Nairobi area. Possibly also ranges through Tanganyika east of the range of *puella* to the Zambezi near Tete, Zomba, and near Lake Nyasa, east Gaza (from Vincent's 1934 data).

Remarks.—The birds on the eastern edge of the range of *B. m. puella* have all the dark color of *puella*, but are smaller. It is to these birds that I apply the name *mystica*. The birds from near the coast are smallest, but from inland as far as Nairobi they are little larger and seem best referred here on size, compared with the fairly uniform size of *puella* from interior Kenya and Uganda. The Mount Kenya area and Kilimanjaro area birds average larger, possibly due to the influence of the mountain masses, and I refer them to *puella*. It seems probable that Vincent's birds, the females apparently with the dark color of *molitor* but smaller in size (wing, male 57–59, av. 57.7; female 54–58.5, av. 55.9) from Zomba, etc., may also belong here.

Among the Kenya birds there is geographical variation in the superciliary. The Maungu birds (two males, two females), the Maktau female, and the Samburu male all have the white loral spot large and conspicuous, and a well-developed white super-

ciliary extending to the sides of the nape. The other birds, from Kibwezi to the Nairobi area, have a smaller white loral, without the conspicuous white line extending beyond the eye.

Should not the extreme eastern birds be separated from the other small birds on the basis of the white superciliary? The name *taruensis* was originally restricted to them.

The minor geographical variation in the species as a whole is poorly known and a white superciliary of some extent crops up occasionally in birds as far away as Angola and South Africa. To limit a subspecies to a small area in extreme southeastern Kenya on the basis of a few skins with this one character seems inadvisable. We would also have to consider the question of naming other small populations (see p. 138).

On the other hand, the size character expresses a more widespread trend, and a name for these small birds is immediately useful in discussing variation in the species. This latter is the sense in which I recognize the subspecies.

Individual variation in this series in the females is not great; one male, however, from Maungu has the gray of the crown and back very much paler than any other specimen referred to this race. Hartert says the type of *taruensis*, a male from Maungu, has the crown nearly pure black.

The similarity of the males of this race to *B. minor* of eastern Kenya are striking, and it was only by associating them with female *mystica* from the same localities and then finding the present form larger and with more gray in the crown that I separated them. However, the taxonomy on the females alone would support the above conclusions. As noted in the discussion of *B. molitor* (p. 136), there is no individual variation in the females that shows an approach to *soror*.

Two names have been applied to populations included here: *Batis mystica* Neumann, 1907 (Jour. Orn., **55**: 594), based on two males from Kikumbuliu (not far west of Tsavo) and Makindu, was described as having only a small white spot in front of the eye and an all-black tail. Compared with *puella* it was said to differ in the darker, bluish gray crown and the darker back, with the feathers mixed with black. Wing, Kikumbuliu specimen, 60 (type) and Makindu specimen, 57 mm.

Lynes (1934, p. 79) examined the type of *mystica* and decided it was no more than *B. m. puella* with a very slight aberration from the norm in coloration. Sclater has also examined the type

of *mystica* and decided it was an example of *puella* with a worn tail from which the white has almost disappeared (Jackson and Sclater, 1938, p. 926). Neither author, however, recognized the existence of small eastern Kenya populations.

I hesitate to use *mystica* (1907), rather than *taruensis* (1921) of van Someren, which latter is clearly applicable, but it seems necessary. Van Someren (1939, p. 72) refers birds from the Chyulu Hills to *puella*, and the Chyulu Hills must be very close to, if not identical with, the type locality of *mystica*. The type of *mystica* has a wing of 60 mm., only one millimeter larger than one topotype of *taruensis*, and in view of its origin surely comes from a population of small individuals. Thus it is applicable to the small *B. molitor* without an eye stripe, from southeastern Kenya.

Batis molitor taruensis van Someren, 1921 (Bull. Brit. Orn. Club **41**: 103—type locality Maungu, southeastern Kenya) was described as differing from *B. m. molitor* in smaller size, with rather large pre-orbital white spot, broad white superciliary; head and mantle dark slate gray; female with chestnut throat patch. Van Someren had seven specimens from Taru Desert, Samburu, Maungu, and Changamwe. Later (1932, p. 196) he gave wing measurements as 53–55 mm. The type is unfortunately a male, and hence very similar to *B. minor*. Hartert (1928, p. 222) examined the type and considered *taruensis* a valid race.

However, Sclater (1930, p. 421) synonymized *taruensis* with *puella*. Friedmann (1937, p. 236) did the same, though suggesting it might be valid, and since then the name has been generally ignored, and even the fact of the range of the species, extending practically to the coast in extreme southeastern Kenya, has been forgotten.

If one were to recognize the extreme eastern small birds with a superciliary as distinct from the small birds without a superciliary just inland from them, *taruensis* could be used for the former and *mystica* for the latter. However, for reasons given above I unite them.

Batis perkeo Neumann

Batis perkeo Neumann, 1907, Jour. Orn., **55**: 352—Darassam, Gurra Country, Gallaland.

Kenya: Wajheir, 1 female; Archer's Post, 1 female; North Uaso Nyiro River, 1 male, 1 female; Garissa, Tana River, 1 female; Tsavo, 1 male, 3 females; Campi-ya-bibi, 1 female.

Tanganyika Territory: Lake Manka (Usambara), 2 males, 1 female.

Wing: Kenya, males 53, 52; females 49, 49, 50, 50, 49, 51, 52, 51; Tanganyika, males 53, 55; female 52 mm.

This species is remarkably similar to *Batis orientalis* and *B. soror.*

Range.—From southern Somaliland and southern Abyssinia (Sclater) to southeastern Kenya and northwestern Tanganyika.

Van Someren (1922, p. 101, and 1932, p. 297) had recorded this species (as *B. soror perkeo*) from Tsavo, M'buyuni, Campi-ya-bibi, and Maungu; but these southeast Kenya records have been largely ignored, or doubted, by Sclater (1930, p. 423), Friedmann (1937, p. 240), Jackson and Sclater (1938, p. 928), and Mackworth-Praed and Grant (1940, p. 736), without examination of the specimens. Only Benson (1946, p. 184), who had examined van Someren's material, corroborated his identification. Not only are van Someren's specimens from southeast Kenya, now in Chicago Natural History Museum, undoubtedly *perkeo,* but our additional material from Lake Manka (Zimmer collection) is a further extension of range. In present material the males agree in having the entire crown rather pale gray like the back (in worn specimens this becomes darker) and in having a much reduced white line from the nostril to above or nearly above the eye. The breast band is moderate, varying in least width from 5 to 6 mm. The females also have the crown all gray, like the back, the breast band is pale rufous, and in every specimen the white throat, without a rufous spot, has a tinge of rufous, most pronounced on each side, that varies from very slight in one Tsavo bird to pronounced in the Wajheir bird. The white supra-loral line in six of the females at most barely extends to above the eye; in the other three (from Wajheir, Garissa, and Tsavo) it is continued as an indistinct superciliary to the nape and is most pronounced in the Garissa bird. This white supra-loral line is tinged with rufous in every specimen. Six of the females (from Lake Manka, Garissa, Tsavo, and Archer's Post) have, on some of the feathers of the hind neck or upper back, a distinct rufous tinge that almost forms an incomplete band. One Tsavo bird, the Lake Manka, and the Campi-ya-bibi birds have a rufous tinge to the white tips of the wing coverts. The Lake Manka female has a few dusky, white-tipped feathers in the crown—remnants of the immature plumage—but otherwise agrees with at least some of the rest of the series, and no other age differences are apparent.

Benson (1946, p. 184) suggests there may be geographical variation in this species, the Abyssinian birds being larger (wing 54 mm.) and with darker breast bands. The Kenya and Tanganyika birds before me show no evident geographical variation, unless the slightly larger size of Tanganyika birds is such.

Neumann described *Batis perkeo* as a species rather than as a race of *orientalis*, to which it is very similar, because he had both forms from the same locality. Despite this, Sclater (1930, p. 423) listed *perkeo* as a race of *orientalis*, a treatment continued by Jackson and Sclater (1938, p. 928). However, Friedmann (1937, p. 240) followed Neumann in regarding *perkeo* as a species, as did Mackworth-Praed and Grant (1940). The excellent field studies of Benson (1946, pp. 183–184), in southern Abyssinia, where he found *perkeo* and *orientalis* in the same area and habitat, have demonstrated conclusively that *perkeo* and *orientalis* are different species.

On the southern edge of the range of *perkeo* there is another very similar species, *soror*, with which *perkeo* has sometimes been united. Van Someren (1922, p. 101) considered it a race of *soror*, linked with the latter by *B. soror pallidigula*. In 1932 (p. 297) he followed Sclater, calling it *B. o. perkeo*, but in 1939 (pp. 72, 73) again he pointed out the resemblance to *soror* and the possibility of their being conspecific. Benson (1946, p. 184) also brought up this point.

The present material indicates that *soror* and *perkeo* are species. On the northern edge of the range of *soror* we have female specimens from as far north as Amani, Tanganyika, and Shimba Hills, Sokoke, and Kipini, Kenya. On the southeastern edge of the range of *perkeo* we have females from Tsavo and Campi-ya-bibi, Kenya, and Lake Manka, Usambara, Tanganyika. Though no locality is represented by the two species, the records indicate that both species live in the same general area.

Though the two species are closely similar, the females differ as follows: *soror* has a pale breast band and a sharply defined throat spot of the same shade, while *perkeo* has a considerably darker breast band and only a wash of buffy to very pale rufous on the sides of the throat or chin. Thus, these two characters vary in different ways, and they do not show signs of intergradation. *B. soror* is slightly larger than *perkeo*, and the following differences are also average: the lesser abundance and distinctness of dark tips to the lateral flank feathers; the lower back and rump with less black mixed with the white, hence less contrasting; the greater

tendency toward an indistinct eye stripe; and lesser frequence of rusty tinge in the hind neck.

From the close proximity, if not overlap, of the ranges of the two forms, and the lack of intergradation, *perkeo* and *soror* appear to be species.

Batis soror Reichenow

This species is so similar to *molitor* and *perkeo* that it has been considered conspecific with each of them. However, in discussing the other species I have given reasons for considering each a different species. These hinge on the close approach, if not overlap, of the ranges in southeastern Kenya, and the lack of indication of intergradation in the present material.

The northern edge of the range was given by Sclater (1930, p. 421) as along the coast to Zanzibar; Jackson and Sclater (1938) did not include it in their list of birds of Kenya Colony; Sclater and Moreau (1933, p. 6) extend the range north to Amani; Vincent (1934) gives the range as extending north to Mombassa.

However, in describing *littoralis*, Neumann (1907, p. 357) recorded a female from Mombassa, and van Someren (1921) recorded the species (as *B. o. pallidigula*) in Vanga. In the material before me I have the following females: Kenya, Shimba Hills, 1, wing 53, Sokoke, 1, wing 51; Kipini, 1, wing 53; Tanganyika Territory, Amani, 1, wing 53; and Mozambique, Lumbo, 1, wing 52 mm. This somewhat extends the range north beyond Mombassa.

The geographical variation in *Batis soror* remains to be worked out; the following names have been applied:

1. *soror* Reichenow, 1903; type locality, Quilimane.
2. *littoralis* Neumann, 1907; type locality, Zanzibar.
3. *pallidigula* van Someren, 1921; type locality, Lumbo.

Neumann (1907, p. 357) gave the measurements of a male and three females from Quilimane as 54–56 mm.; he compared *littoralis* with *soror*, under the latter, as smaller (wing 51–54), with similar-sized breast band in both sexes; the female of *littoralis* has a darker breast band than *soror*. He had specimens of *littoralis* from Zanzibar, Mombassa, and Usambara.

Van Someren described *pallidigula* as the female having the breast band much paler than in *soror*, not darker as in *littoralis*, and smaller than *soror*. He gave the range north to Vanga, in Kenya (wing, male 51; female 52 mm.).

The small size of the northern birds is supported by my material (5 females, 51–53 mm.; see above). As to color, the three Kenya and the one Amani female have very pale breast bands. Compared with them the one Lumbo female has a slightly darker, richer breast band, and is slightly darker gray above. Topotypical material of *soror* and *littoralis* needs to be compared to settle the question. Currently *pallidigula* and *littoralis* are considered synonyms of *soror*.

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