A LONG-TERM STUDY SUGGESTS THAT THE SLATE-COLOURED SEEDEATER *Sporophila schistacea* IS BOTH MONOTYPIC AND POLYMORPHIC

by Robin Restall

The Slate-coloured Seedeater *Sporophila schistacea* is a medimum-sized finch which ranges from Belize and Guatemala (immediately south of Mexico) southwards through Central America to northern South America, reaching as far south as north-western Bolivia. It is poorly known and generally regarded as probably being rare. It was first described in 1862, but for nearly a century scientists and ornithologists alike confused it with the Grey Seedeater *S. intermedia*. Both taxa had the name Grey Seedeater *Spermestes grisea*. It was not until 1923 that they were finally recognised as distinct and separate species. The specific characteristics that separate the Slate-coloured Seedeater from other grey seedeaters are its orange bill, the white marks on the sides of the throat, the white half-wing-bar and its greenish olive legs and feet, with pale coloured nails.

It is apparently normadic, flying in flocks high over forests and wooded foothills, looking for flowering or seeding bamboo. It flies all along the Northern Cordillera of Venezuela and we have twice seen it in our garden in Santa Paula, in Caracas. On one occasion a bird flew into the house in an attempt to join the birds singing in the laboratory. Like all birds that are associated with seeding bamboo, it can be common for a few months, but then disappear. Most birds that are seen in bamboo-free locations are in transit, i.e. passing through. Its exact relationship with bamboo is unclear. Unlike most *Sporophila* seedeaters it has a peculiarly-shaped bill with a sickle-shaped upper mandible only one third as deep as the larger, lower mandible; it also has rictal bristles (see Fig. 1). The construction of the bill suggests it is adapted for dealing with hard bamboo seeds *Chusquea* sp., while the rictal bristles suggest it catches and consumes insects - presumably those found on its preferred species of bamboo. I have seen it hawking insects in my aviary and searching the leaves of the *Ficus*, apparently looking for insects. Most individuals will readily take mealworm larvae and pupae, but ignore the beetles. They will also nip out the emerging buds of *Chusquea* bamboo growing in the aviary - to such an extent that three *Chusquea* bamboos I was attempting to grow, were all killed by these seedeaters.

Over a period of more than 10 years, I studied specimens in museums in Europe, North America and here in Venezuela. I gathered information from birders, bird keepers, trappers and bird sellers, but considering the depth and breath of my investigation, I came up with very little information of real

value. By far the most rewarding part of the project was obtaining live birds and keeping them in the laboratory and aviary. Many birds were kept for varying periods during the six years of the study, some for only a few months and a few for as long as five years. The total numbers of individuals studied was more than 70. As the study progressed, I carefully made measured drawings of most of the birds - some of different birds together and others of particular birds - and, as time passed, repainted them again and again.

Summary

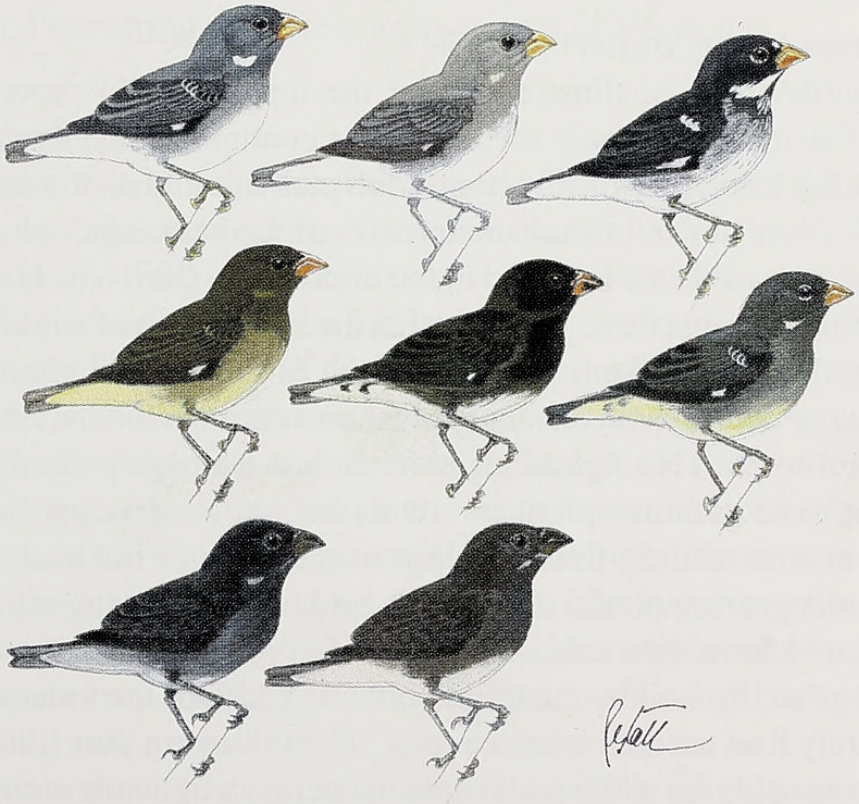
Both sexes of the Slate-coloured Seedeater have three distinct and separate plumage phases. These are juvenile, intermediate and adult. The progress of the female's plumage is predictable and variations are slight, probably within the allowance of individual variation. However, the male's plumage becomes increasingly variable with age and that of adult males can range from the common grey and white bird illustrated in field guides, to morphs that can only be identified as *S. schistacea* by the shape of their bill and their song. The illustrations on pp. 174-175 show the development of the plumages of some individuals and give an indication of the range of variation. The chart on p. 178 shows at a glance how the plumages develop from juvenile to intermediate to adult.

Juvenile

Six different juvenile plumages are shown at the top of p.174. Most juveniles have either warm brown or warm grey upperparts. The bill is dusky coloured, as are the legs, feet and nails. These two forms are sufficiently distinct and frequently occurring to be recognised as two separate morphs. The third has citron-olive plumage very similar to the first intermediate plumage and, unless the bird has a yellow fleshy gape flange, it is not possible to tell whether it is a juvenile or an immature bird. Alas, I have no certain evidence that the citron-olive morph has a juvenile female plumage. Some of the individuals I painted were clearly recently fledged, as shown by the flange of yellowish skin at the corners of the gape.

Intermediate female

The next group of birds (below) shows the progression of two different females. The bird on the left goes from juvenile to a yellow-bellied citron-olive intermediate plumage (centre) and then into its first adult plumage (on the right). The bill of the young juvenile female is entirely dark brown, but after a few months shows a characteristic orange to horn-coloured spot under the bill. The dark, usually uniform coloured undertail-coverts, appear to be a characteristic of female plumage, although I have not had sufficient specimens, that were subsequently confirmed to be females, to be positive about this. Most males in intermediate plumage have pale, ticked



or cinnamon undertail-coverts; the cinnamon is a lighter and warmer colour than the dull brown of the female's undertail-coverts.

Intermediate male

Males enter the intermediate plumage phase alongside females of the same age. The intermediate plumage though usually extends through several moults and several distinct phases of development. Many birds showed at least two distinct intermediate phases and most showed three, some others showed four or more. The third group of illustrations (at the foot of p.174) show part of a series of studies over several years of a male, that follow it from juvenile (upper left) through the first dull citron-olive phase to the bright middle intermediate phase, when the amount of orange on the bill is increasing from the base towards the tip. By the time the bird has acquired the third intermediate plumage, the orange on the bill is brighter or richer in colour, but the plumage is paler and less greenish above. The yellow below has some white mixed in with it, and the amount of white increases in the next plumage. By the sixth plumage in this sequence (lower right) the bird is clearly showing emergent basic adult plumage; the bill is now entirely orange and touches of black and white are showing on the face and throat. If one of the wings is spread and the primary coverts are pushed to one side, a small amount of white may often be seen at the base of the primaries, as was the case with this particular bird.

The progress of the 'butterfly' male

The fourth group of illustrations (at the top of p.175) show how the plumage of an individual male goes through a continuing development - that continues after it acquires its first basic adult plumage and on through the life of the bird. Note how all the characteristics of the basic adult plumage are apparent in the case of the first bird in the middle row (bird No. 4). It is only when the bird is almost three years old that the small patch of white becomes apparent at the base of the primaries. In the following two plumages, the basic plumage becomes increasingly clear and definitive. The first bird on the bottom row (bird No.7) has begun to show a plumage pattern that goes beyond the basic definitve plumage - with the white marks on the sides of the throat now extending from the chin to the sides of the neck and with more white appearing on the wings; this bird had three wing-bars - it was the only time I have seen this. The fully adult male usually shows only a partial wing-bar, formed by the terminal white edges of the innermost four, or more rarely five, median wing-coverts. The following year (the bird was now five years old) the white had begun to encroach upwards onto the sides of the breast. By the time the final drawing on the right-hand side of the bottom row was made, not only had the small patch of white at the base of the primaries disappeared, but the amount of white on the sides of the throat

and on the sides of the breast had dramatically increased. Bird keepers in Venezuela who specialise in keeping this species, say that this is a very rare variety and is known amongst them as *El macho Mariposa* (the butterfly male) and is highly prized. A photograph of a bird sent to me a few years ago by Hennning Pust in Denmark was an example of this morph.

Adult male polymorphism

The final group shows eight adult male plumages, painted from live, wild birds. These are birds that were brought to me when they were already adult or moulted into these plumages while in my aviary or laboratory. They are not one-off plumages, as I have seen each one a few times, or many times, on different occasions. Nonetheless, the grey male, the first bird on the top row (bird No.l) and the bird on the right in the middle row (bird No.6) are the common ones that are usually seen (the solid olive cast to the grey plumage is not noticeable in the field). Note also that the two birds on the bottom row (birds Nos. 7 & 8) are extremely unusual and very unlike the typical grey bird. But this is not the definitive set of morphs or variants - according to bird keepers here in South America there are up to no fewer than 20 different varieties recognised within the bird keeping fraternity. They include birds with long, forked tails and birds with short, square-cut tails, 'dwarfs and giants' 10cm (approx. 4in) and 13cm (approx. 5in) in length from the tip of the bill to the tip of the tail, for example. All are morphs I have found occurring along the northern part of Venezuela.

Plumages chart

It is easy to see in the first box (on the following page) the three basic juvenile plumages that occur. There is never any white at the base of the primaries in any of the juvenile plumages. The colour of the undertail-coverts is variable (inconsistent). The bill is typically *Sporophila* in profile, but is 10%-15% smaller than that of the adult; the shallow, scimitar or scythe-shape of the upper mandible is apparent and identifies the species, should there be any doubt. The legs, feet and nails are dull to greyish brown to dusky.

Listed in the next two boxes are the intermediate plumages. In her first intermediate plumage, the female moults into the same citron-olive colour as the male, but is distinguished from him by having all-dull brown undertail-coverts. The legs and feet may lighten and become more greyish to olivaceous grey and the nails may lighten to a kind of horn colour. The bill is dusky with a small area of horn colour under the base.

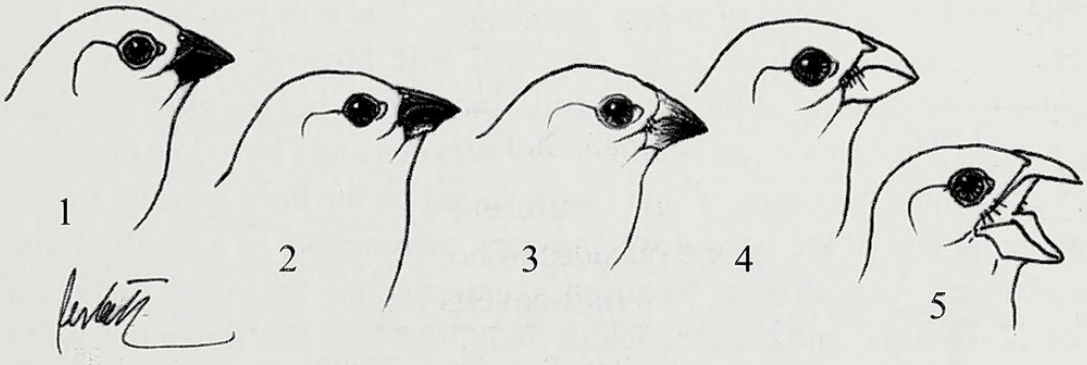
The male usually has an extended intermediate stage, passing through three morphs, or, if the entire intermediate stage is regarded as being citron-olive, then there are usually three phases to this morph. In the second of these phases, the plumage is surprisingly bright. The belly is bright citron

Plumages chart
Juvenile
Three morphs 1. Warm brown 2. Warm grey 3. Citron-olive Small, all dusky coloured bill Legs, feet and nails dusky
Intermediate
Female monomorphic Bill dusky with small pale spot under base Undertail-coverts uniform brown
Male progresses through three morphs 1. Dullest Bill dusky with emergent pale spot under base Olive above, sulphur-yellow below 2. Brightest Bill gradually becoming orange from the base Bright olive above, citron-yellow below 3. Palest Bill all orange Greyish olive above, white emerging into yellow on underparts Undertail-coverts of all three variable - often cinnamon
Adult
Female monomorphic Bill uniform dusky Brown above and on sides of body, belly white to buffy Undertail-coverts brown
Male has multiple morphs 1. Soft grey 2. Typical grey 3. Dark grey 4. Citron-olive 5. Black above 6. Olive-grey above All have an orange bill and white at the base of the primaries 7. Charcoal 8. Fuscous Bill partly orange, no white at base of primaries

and the back is bright olive green. The soft parts do not change with each moult, but change gradually from dusky with a pale horn coloured patch under the base, becoming increasingly horn-orange around the base of both mandibles, through nearly all-orange with a dusky tip to finally all-orange. The colour of the legs, feet and nails also change gradually, the legs and feet becoming olive-grey and the nails becoming increasingly pale to pale horn colour with some older birds. There are though also individuals with dull coloured legs, feet and nails, that continue through into adult plumage.

In the final two boxes, it can be seen that the female returns to a cryptic brown colour, with a whitish to buffy belly and an all-dusky coloured bill. The legs, feet and nails are variable in colour. In contrast, the male may moult into the plumage of one of several morphs. At one extreme is a medium grey morph, with a white belly and yellowish bill and looking for all the world like the Grey Seedeater *S. intermedia*. I have even had birds in this plumage with brown legs, feet and nails, and it was only the characteristic bill shape that confirmed their identification. At the other extreme is the dark charcoal coloured bird, with a very clearly defined white belly and with white markings on the throat and wings, a rich orange coloured bill and green-olive legs and feet and pale yellow nails. The only characteristic of adult plumage which is constant in the male is that the coloration and pattern markings invariably intensify with each year that passes.

Fig.1. Bill colour of Slate-coloured Seedeater.



1. Juvenile: bill entirely dusky; 2. & 3. Intermediate: bill initially dusky but with increasing amounts of yellow-orange; 4. & 5. Adult male: bill clearly showing line of the cutting edge. Note also the rictal bristles.

Conclusion

It seems undeniable that the Slate-coloured Seedeater is polymorphic. I have not been able to examine the types of the various subspecies described, but from photographs, descriptions and measurements, all fall within the

range of taxa found in Venezuela and, therefore, it seems to me equally undeniable that the species is monotypic. This study and the findings would have been impossible without the use of avicultural skills and experience. Every effort was made during the six years of the study to maintain the birds in as natural conditions as possible, with exposure year-round to local hours of daylight, sunlight and rain. As feeding was of great concern, fresh growing grasses that were in seed were offered regularly, including green rice on the stem, collected fresh from the rice fields, and a wide variety of seeds. Insects were also offered, as was a brand of softfood imported from the USA.

Aviculture

This species is well-known but is uncommon in aviculture outside of South America. It is popular amongst specialist birdkeepers in some South American countries. It is apparently bred regularly in Brazil, where it is said to do best in an upright cage. Birds from northern South America (mostly from Venezuela) are (illegally) taken across the border into Brazil, from where they are exported to continental Europe, where this species is favoured by *Sporophila* specialists. The male has a strong and persistent song and is a showy and active bird in an aviary. When in breeding condition, he will chase all other yellow- and orange-billed birds and, at times, almost any other bird he perceives to be invading his territory. The female builds a very small, neat, cup-shaped nest and, in my experience, will readily use coconut fibre to make the cup of the nest, subsequently surrounding it with fine grass rootlets and odd strands of grassy vegetation. She lays two, or more rarely three, pale, slightly bluish eggs, speckled with browns, including umber, slightly more densely at the broad end. Incubation begins after the second egg is laid. The female can become very nervous and I have lost clutches of eggs and young nestlings, which I have found on the floor beneath the nest, or at the far end of the laboratory or aviary, presumably as a result of minor disturbances. As with other Neotropical grassfinches, the young fledge early (after 12-13 days) and the precocious fledglings hide low down in cover for the first few days and continue to be fed by their parents.

Avicultural Society Vice President Robin Restall lives in Caracas, Venezuela. E-mail:robinrestall@gmail.com