THE CHESTNUT-BELLIED SEED-FINCH *Oryzoborus angolensis* IN THE WILD AND IN AVICULTURE

by Robin Restall

Introduction

The Chestnut-bellied Seed-Finch, also called the Lesser Seed-Finch, is widespread across tropical South America east of the Andes. It has a very attractive song consisting of various melodious trills and warbles, usually recognisable despite many variations. Despite being widespread and potentially common, its singing ability has made it a victim of bird trappers and as a result it is rare or uncommon to locally common at best. Most of the birds are trapped for the South American market, this species only occasionally occurs in aviculture in Europe and North America and there is little if anything of value about it in the avicultural literature outside of Brazil. It is subject to considerable variation in size and plumage, and being comparatively easy to breed in captivity, is known to have several plumage variants. It has also hybridized with several other finches.

Habitat

In Colombia the Chestnut-bellied Seed-Finch is found at woodland edges, on wasteland and in shrubbery. In Guyana it may be found in swamps and abandoned previously cultivated forest clearings and also in partly grassy and partly cultivated clearings in and near the edge of forests. In Surinam it is said to occur on sandy ground at the edge of forests and at the edge of plantations. In French Guiana it is a bird of secondary growth and open country bordering large forests. In Ecuador it is found in shrubby clearings that are usually not grassy and tends to avoid areas of intensive agriculture. In Brazil it is primarily a bird of undisturbed wet grassland and is a typical species of riparian thickets and thick bush alongside rivers in the *cerrado*. It is also said to be found in the *burrizales*. These are wet swampy grasslands with grasses up to 2m (6ft 6in) tall, scattered with Moriche Palms. These also occur in Venezuela where they are known as *morichales*. Mention has been made of the Chestnut-bellied Seed-Finch inhabiting pastures and areas that are densely bushy near water in Argentina. Here in Venezuela it is found it in a variety of habitats, it is said to occur in shrubby forest clearings and grassy forest borders and I have encountered it in habitats ranging from montane forest in Táchira to open savannah in southern Bolívar State. In Táchira I netted a male in dense montane second growth woodland not far from a path and river and several kilometres (miles) from open grassland. It appeared to be travelling through the woodland in the direction of an open

area. It seems that most sightings of the bird are in areas not far from water or wet areas.

Food and feeding

It is apparently vegetarian, however, the stomach of one individual contained insect fragments. It may often be found foraging singly but has also frequently been seen feeding in loose congregations of seed-eating birds in open areas. On the Gran Sabana in Venezuela I have found it foraging with other seed-eaters - *Sicalis* grassland finches, *Zonotrichia* sparrows and different *Sporophila* seedeaters - on open grassland that had been burned recently and which was still smouldering. This area was not far from running water. Favourite seeds of this species in Brazil, include those of the sedges *Tiririca*, *Cyperus rotundus* and the *navalha-de-macaco*, *Hypolytrum schraderianum*. In Guyana it was seen feeding exclusively on *Scleria pretensis* sedges. It seems to me that it is primarily reliant, if not dependent, on seeds of sedges (family Cyperaceae). It is also one of several seed-eaters observed feeding in *Cecropia* trees, eating at the fruits and also taking Müllerian bodies from the leaves, petioles and stems.

Variation in *O. angolensis*

The following analysis is based on a series of 118 specimens in the Colección Ornithológica Phelps in Caracas, Venezuela, occasional sets of measurements taken opportunistically during visits to various other collections over about 10 years, observations on live birds captured during field-work and seven live birds observed under controlled conditions over three years, together with an extensive search of the literature.

Bill, colour, shape and size

Juvenile birds, that is birds that have not yet had their first body moult, have a bill with a curved culmen, not unlike that of a *Sporophila* in character. The bill is large and apparently no different from that of an adult, but a qualified comparison of 18 specimens showed that they are on average 10% smaller in all dimensions. A typical set of measurements is: exposed culmen average 11.5mm, with a range 10.5mm-13.6mm; height of bill from base of mandible to highest point of exposed culmen average 11.2mm, with a range of 10.0mm-12.6mm; width across the base of the mandible average 9.7mm, with a range of 9.1mm-10.7mm. The bill is dark brown, usually with some horn-colour infused, especially at the base and along the cutting edges. The bill is smooth, without ridges or grooves. It becomes increasingly blackish as the bird matures.

By the time the bird is in immature plumage, that is between the first body moult at four to six months of age and the first full moult at 10-12 months, the bill has begun to change shape, with the base of the culmen swelling and rising, thus giving the culmen a flatter appearance. In addition the base of the culmen begins to extend back along the skull in the form of

a narrow strip (Fig.1). The process of change is greater in males than females at all ages, but in the immature the comparison is more noticeable and the shape of an immature female's bill may seem exactly like that of a juvenile.

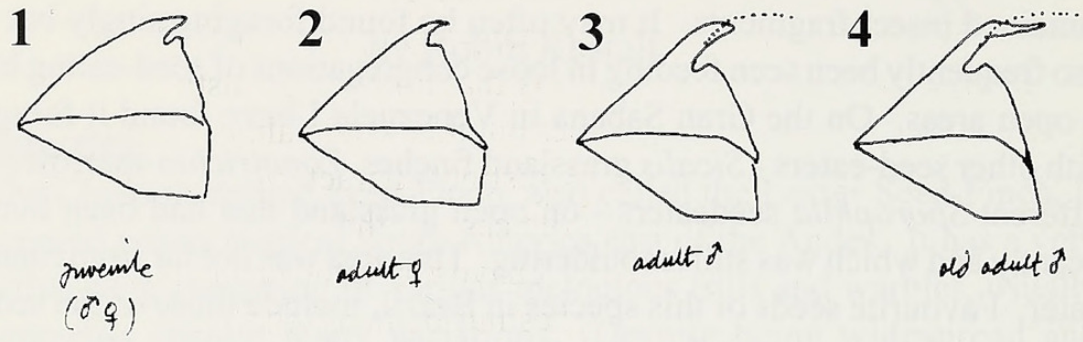

Fig.1. Examples of how the bill varies according to the age of the bird.
1. The juvenile has a slightly curved culmen that is the same in the male and female.
2. The adult female has a flattened culmen.
3. The adult male has a flattened culmen that begins to swell at the base and extend backwards.
4. The culmen usually extends further back in old males.

The bill of the adult female (from 21 specimens) typically measures: exposed culmen average 13.15mm, with a range 11.6mm -14.5mm; average height 11.7mm, with a range 10.7mm-13.25mm; width across base of bill average 10.1mm.

There is an enormous variation in bill size among adult males. This is possibly age related, but one of the largest bills I found was that of a bird that was just finishing its first full moult, thus it was only about a year old. Two individuals that had been in captivity for several years, both had fairly modest sized bills. I do not know at what age the bill stops changing shape, but it seems it may take a couple of years or more. In the two main aspects of the adult bill, i.e. size and shape, the latter appears to be more age related. The growth of the narrow strip from the peak of the culmen back along the skull (Fig.1) is part of this ageing process, for I have failed to find it in young adult males regardless of the size of their bills.

The range of bill sizes is quite amazing. On a total size basis, measuring the volume of the bill in cubic mm (Restall, 2002), the smallest of 78 adult males measured 167 cubic mm and the largest 379 cubic mm. Thus the largest bill was more than double the size of the smallest. Adult males had the following bill measurements: exposed culmen average 13.25mm, with a range of 11.1mm-14.65mm; average height 11.8mm, with a range of 10.0mm-14.0mm; width of bill at base average 10.2mm.

There are at least three possible explanations for the variation in the size of the bill. The first is sexual attractiveness. The *Lonchura* munias of the Asia-Pacific region are in many ways the Old World analogue of *Oryzoborus*. I found at least in the subgenus *Munia*, larger bills are a bigger attraction to

females, conspecific and congeneric, whether already paired or not, and apparently are a strong sexual stimulant (Restall, 1996). It could be that *Oryzoborus* males with larger bills attract females and may well mate with birds that are paired to other smaller-billed birds. The principles of this phenomenon are well known among many families of birds.

The second possible explanation is that a group of distinct-size-billed birds might in fact be a cryptic species but this would almost certainly have to be tied in with some other equally distinct characteristics such as longer tarsi, or a plumage character, as in the case of the Ring-necked Seedeater *Sporophila insularis* (Restall, 2002). I have not found any natural grouping of figures within the data for the Chestnut-bellied Seed-Finch that would support such a hypothesis.

In Africa the *Pyrenestes* seedcrackers have a similar, over-sized, sharp bill like that characteristic of *Oryzoborus*. Chapin discovered in 1924 that there is a considerable range in bill sizes and that they fall into three clearly definable groups without intermediates. Smith (1991, 1993) subsequently discovered this is trophic polymorphism, associated with feeding. The phenomenon is known in Neotropical ornithology where, for example, in the case of the Hook-billed Kite *Chondrohierax uncinatus*, birds with different sized bills feed on different sized snails. In the case of the Black-bellied Seedcracker *P. ostrinus*, each different bill morph feeds on a different species of sedge, and what separates the sedges is the size and hardness of their seeds. Apparently, it is the width of the mandible at the base that most determines the strength of the bill as a seed-cracking tool (Smith, 1993). Smith worked for two years studying *Pyrenestes* seedcrackers in the field in Cameroon, West Africa. This was complemented by the shipping of 97 birds to a special special purpose-built breeding complex at Riverbanks Zoo, South Carolina, USA. There they were bred to three generations and the bill morph genetics were worked out. Until something of this order is conducted with the Chestnut-bellied Seed-Finch, the possibility that it is a trophic polymorph, must remain hypothetical. As it is, I have not been able to place bill measurement data into any grouping that might support this hypothesis.

Moult and plumage variation

Between the juvenile and immature stages there is a small but distinct change in plumage coloration. This is most noticeable in males, but as with the bill change, it can be the same in both sexes. With the first moult, the upper surfaces become a denser, more intense and slightly darker brown, while the breast and underparts become a richer, more rufous brown.

The male's moult into adult plumage tends to follow the pattern of first the head, nape and upper breast showing some small black feathers. Then, the wing-coverts, especially the median and greater, start to change, beginning

with the innermost feathers. The tertials drop within the somewhat random body sequence. The wing feathers typically start moulting from the middle, with the first primary and the innermost secondary and gradually moving towards the outermost primary and the innermost secondary. The tail starts with the outermost pair of feathers. This is the general pattern, but there appears to be a haphazard element as well, with some feathers being dropped and re-grown without any sequence.

The adult male, but not the juvenile nor immature male, has a highly variable white speculum at the base of the inner seven primaries and usually all of the secondaries. I have never found white on either of the outermost two primaries, although occasionally the seventh is without white. The white is on the leading edge of the six inner primaries, but on the trailing edge of all the remiges except primaries eight and nine. The white is always visible when the bird is in flight, but it is very variable in size and can vary from a narrow strip to a broad band. When the wing is folded, the white may be visible as a large white patch, or may be completely hidden, giving the appearance of an all-black wing. There is no apparent correlation between the amount of white and the size of the bill or the size of the bird.

The underwing of both sexes in all plumages is pure white. This may extend up over the inner bend of the wing of the adult male and show as a white patch at the shoulder and is sometimes quite bold. There are also irregular white patches that occur at random. I have twice seen a bird with a pair of matched white throat patches, and a bird with a white patch central on the throat. Another had white on the scapulars, while yet another had white edgings to the median wing-coverts and along the flanks. I have also seen a bird with a white coronal line. Other sports have also been seen and recorded. In every case that I have seen, the bird was otherwise perfectly normal, and I have never seen a case where mixed breeding might explain the presence of the white. There have been a few cases where the pattern of black and brown on the breast has varied. All-black birds have been recorded that have been totally melanistic, even lacking white on the bases of the remiges.

There are three colour variants with different coloured breasts. The common or basic colour of the breast is chestnut, but with some birds this is a deeper more intense bay colour and with some others it is a brighter, lighter, burnt sienna. In the large series I studied, about 20% of the old males had a bay coloured breast while about 10% of the birds had a burnt sienna coloured breast. The under tail-coverts are typically chestnut with the outer edge of the feathers being black. However, there are variations from all-chestnut to all-black (see plate p.17 for examples).

Finally, the males vary considerably in total length – never a scientifically reliable data - but an indication of variability nonetheless. Adult males varied by some 20%, from 125mm-150mm.