Scoring tongue-spots on adult Reed Warblers at Wicken Fen

Pullus and recently fledged juvenile Reed Warblers all start life with dark tongue-spots. Some birds retain these tongue-spots into their returning (as adults) second calendar-years and beyond; others clearly do not.

Various studies have considered the degree to which tongue-spots might prove a useful way of ageing individual Reed Warblers, and in particular, of identifying second-year (age-code 5) birds.

Rhys Green's piece in WFG Report 9, 1977 (pp12-13) concluded that *most* adult Reed Warblers retaining 'dark' grey tongue-spots were one year old (= 5s); that *some* birds lose their tongue-spots within a year of hatching; and thus that birds with 'pale' spots and those lacking spots could only be classed as post-juvenile (= age-code 4).

Karlsson, Persson and Walinder in their Falsterbo paper (Vår Fågelvärld 47, 1988, pp141-6) scored tongue-spots as part of a three-character soft-part colouration photographic study, combining iris-colour, and tarsus-colour with tongue-spots. They concluded: "As changes in colouration of the soft parts appears to be a continuous process, some birds display intermediary colouring stages, and in such cases the experience of the ringer must be the arbiter".

[I did initially attempt to score Wicken birds this year on all three Falsterbo criteria, but soon found that I couldn't comfortably discern the differences; nor did I have the time. I also felt that each character was influencing my score of the others. No doubt scoring could be done properly by professional photography: in consistently well-lit lab conditions, probably using a LED USB microscope; then with the photographs scored blind, feature by feature, by different objective observers.]

David Norman, on *www.davidnorman.org.uk*, picked up on the Falsterbo data, and applied the same three criteria to his adult Reed Warbler captures. He describes ageing *some* adult Reed Warblers as ages 5 or 6, but goes on to say that "some can appear ambiguous and I would urge caution and that ringers should not strive for spurious accuracy."

Svensson, in his passerine ID guide, refers again to the Falsterbo study, summarising this as: juveniles (= 3s) – Prominent dark tongue-spots at least until early October (ca 90%), or faint grey spots only. Then as second-year (= 5s) – no tongue-spots (ca 9%) or only faint traces left.

Scoring method

Rhys Green distinguished three categories of adult tongues: distinct dark grey spots; indistinct pale grey spots; and no trace of spots. These values map well onto the Falsterbo study, which also has three adult tongue-spot scores: grey, more diffuse spots; only traces of tongue-spots; and no spots.

The Falsterbo study gave these values a numerical scale: 2 for grey/diffuse; 3 for traces; and 4 for none (with, in addition, 1 for the black, well-defined spots usually confined to age 3 birds, which we won't be using here).

The Falsterbo study determined that

- 6 out of 47 known-age 5s showed Stage 2 (darker)
- Stage 3 (paler) occurred quite frequently in known-age 5s (90%); in 10 out of 24 in 7s; and in 4 out of 46 in 8s.
- Stage 4 (no spots) occurred in >80% of 6s; and in 4 out of 47 in 5s.

They summarise as follows

"Using tongue-spots as a single age criterion only enables recognition of 3s (if at Stage 1); or (probably) 6s (if Stage 4). In a few birds there were two distinct round spots, no larger than a full-stop.

It is possible that some Reed Warblers never lose their tongue-spots."

Indeed.

Consistency

For the 2012 WF study, I scored adult birds myself on the 2-4 Falsterbo tongue-spot scale and was interested in checking how consistent I had been on those birds with multiple captures which I had been able to score on more than one occasion.

Four individuals were multiply scored consistently each time captured as Stage 2 (dark); six were scored consistently as 3 (pale); and nine consistently as 4 (no spots).

Some probably genuinely intermediate individuals were inconsistently scored as 3/3/2; as 2/3/2/3; as 3/2; as 2/3 (two); and as 2/3/3 (two). The latter four birds possibly suggest progressive fading during the four months (May to August) in which the birds were present.

There were only two real inconsistencies: two birds on 4 then later 3.

I also tried to score before I read the ring-number, in order to try and avoid any subconscious bias from my familiarity with ring-number sequences. I also wonder if the Falsterbo or Norman studies scored the three characters (iris/tarsus/tongue) independently with different observers.

Sample size

All the studies comprise two mutually-exclusive classes of adult.

Birds of known age were originally ringed as juveniles. Thus a juvenile ringed as age 3 in 2011 would be a known-age one-year-old when retrapped as a 5 in 2012.

Minimum-age birds were originally ringed as adults of unknown age (as 4s). Thus a bird ringed as age 4 in 2011 would be at least (minimum age) two years old when retrapped in 2012.

The Falsterbo study included 172 adults, all retraps from previous years, of which 131 were of *known age*. Their study ran from 1983–87, 21 July to 30 September, so on average later in the season than the Wicken birds (May to September), possibly giving them some additional 'fading time'.

David Norman had 635 'handlings' of adults 1991–2011, excluding multiple handlings of a bird within a year (? = each individual counted once each year). On the three Falsterbo colouration criteria (iris/tarsus/tongue) he adjudged 50% to be age 5, and 18% age 6. He left 32% undetermined as age 4.

Rhys Green's Wicken study ran for two years 1976–77. There were 25 birds of *known age*; and 226 *minimum-age* birds.

My scoring this year found 16 birds of *known age*; and 120 *minimum-age* birds. This number is lower than the others for obvious reasons. It was just one season; and I was the only person scoring the tongues – and that only as and when I had time. There's also some evidence that summer 2012 followed a winter and return-migration with exceptionally high adult mortality. There were certainly many fewer returning adults than one might have expected after the record-breaking season in 2011 when 860 new birds were ringed at Wicken.

Results and conclusions

The attached table shows the normalised results of the three studies.

In terms of using tongue-spots to age any individual bird I conclude from this that the absence of spots does indeed suggest an older bird; and that the presence of spots, and their greater degree of distinctness, does suggest a younger bird. But that's as far as their usefulness goes, simply confirming that the spots do fade over time, but to a variable degree (and not always entirely).

Thus tongue-spot score cannot be used as a reliable ageing indicator at the individual level, even if combined with other characteristics.

It is probable, however, that the mix of tongue-spot scores within a population will give some indication of the proportion of second-year birds to older birds. If the adult population was consistently scored each year, then no doubt there are statistical tools which could determine – year on/against year – differential adult and juvenile mortality and survival within a population.

An assumption would need to be made that tongue-spot fading was linear over time and wasn't affected by factors other than simple age – for example, by condition, or breeding/non-breeding, food availability, sex, region, even mood etc.

Equally, some better method would need to be found to calibrate the difference between dark/distinct (Stage 2) and pale/diffuse (Stage 3) spots.

My own subconscious bias was perhaps to get a fix on 'average' spottiness and then to find 50% of the birds darker (= 2) and 50% paler (= 3). Whereas the Falsterbo study clearly had a disproportionately high number of paler-than-average birds.

Comments welcome.

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