



Plate 102. Male Lesser Whitethroat in song, Fairways View, Irvine, Ayrshire, May 2019. © Photos by Tom Byars

Lesser Whitethroats in Ayrshire: does emergent scrub provide a new breeding habitat?

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In Ayrshire, Lesser Whitethroat breeding territories have always been in open areas of ungrazed Hawthorn and/or Blackthorn scrub with a dense understorey of other bushes and Bramble. Since 2012 some Lesser Whitethroats have bred in dense areas of low emergent Gorse scrub mixed with Broom. Comparisons between Traditional Breeding Habitat territories and New Breeding Habitat territories showed that canopy height was significantly lower in New Breeding Habitat territories. In the traditional territories, Hawthorn, Bramble and Gorse were the most common species. In new territories, Gorse and Broom were the dominant species as Hawthorn and Bramble have not yet fully developed. The use of emergent Gorse/Broom scrub as breeding habitat has not been documented in Scotland before. It allows Lesser Whitethroats to utilise an earlier stage in the vegetation succession. This may allow the species to colonise suitable areas outwith the Clyde/Forth valleys, where thorn scrub habitat is scarce.

Introduction

The Lesser Whitethroat *Sylvia curruca* has been studied extensively in Ayrshire since 1983 when the species was undertaking range expansion throughout southern Scotland (Forrester *et al.* 2007). The breeding distribution is mainly coastal. In the UK, Lesser Whitethroats expanded their range northwards by 33% between the 1968–72 and 2007–11 breeding atlases. This has been attributed to climate change (Balmer *et al.* 2013). I wanted to make an accurate assessment of the current Ayrshire breeding population and discover if the species had started to colonise other habitats as suggested in our previous papers (Byars *et al.* 1991, Byars 2010).



Plate 103. Lesser Whitethroat nest, Garmock East, Ayrshire, June 2011.

Study areas

The study area covers the Ayrshire recording area. All habitat sites had been identified from previous surveys, local bird reports and information from other observers. In Ayrshire, typical Lesser Whitethroat breeding habitat consists of open areas of mature Hawthorn *Crataegus monogyna* and/or Blackthorn *Prunus spinosa* scrub with a dense understorey of Bramble *Rubus* sp., Gorse *Ulex europaeus*, Dog Rose *Rosa canina* and Willow *Salix* sp. Breeding habitat usually forms distinct habitat islands, often surrounded by other habitats such as farmland, heath, waste ground (brownfield sites), marsh and ponds. All sites were located within 3 km of the coast, situated mostly on a slope and below 200 m elevation.

Methods

All suitable habitat which had previously held territories was checked every one to two days during a 30–35 day period between April to July and annually from 2006 to 2019. Any breeding territories newly discovered were also checked within the same time frame. Breeding habitats were estimated in hectares and territories were mapped using census techniques as explained in Byars *et al.* (1991). A total of eight habitat sites known to regularly contain Lesser Whitethroat territories during the study period were chosen to investigate their vegetation structure (Table 1). Four (Plates 104–106) were classed as Traditional Breeding Habitat (TBH) and the other four (Plates 107–109) were defined as New Breeding Habitat (NBH). As with previous studies, vegetation sampling at all eight sites using a quadrat method was carried out (Byars *et al.* 1991). This involved placing a 100 m transect line within the territory and using a random number generator (0–100). Fifteen sampling sites were then located along the transect line. At each sampling site, a one metre quadrat was then placed at ground level and all plant species were identified within this square. Percentage cover and vegetation density were also estimated from vertically stacked height bands from 0–1 m, 1–2 m, 2–3 m, 3–4 m, and so on until the top canopy had been recorded. Statistical analyses were carried out to identify height and vegetation differences between the TBH and NBH.

Table 1. The eight Lesser Whitethroat study areas in Ayrshire.

Site number and name	Grid reference	Altitude (m)	Habitat area (ha)
Traditional Breeding Habitat (TBH)			
1. Ardeer Pipe Embankment	NS 291 420	6	0.81
2. Ardeer Fen (east)	NS 287 418	7	1.21
3. Bracken Bay	NS 277 179	48	0.72
4. Garmock Floods	NS 307 416	4	0.58
New Breeding Habitat (NBH)			
5. Hillhouse Quarry (south)	NS 347 333	60	2.46
6. Garmock East	NS 303 413	7	1.10
7. Garmock Lagoons	NS 298 416	4	0.80
8. Fairways View	NS 312 404	11	0.33

Results

Over the 2006–19 study period, the Ayrshire Lesser Whitethroat population varied from 10 to 22 occupied territories (Table 2). The number of territories in the TBH sites ranged from five to 15 and three to five territories in the NBH sites, reflecting recent establishment there.

Table 2. Number of Lesser Whitethroat territories recorded in Ayrshire, 2006–19.

Year	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Number of territories	11	10	12	10	16	14	22	17	18	20	11	15	11	10

The four TBH sites contained mature Hawthorn canopy (maximum height between 4–6 m), whilst the four NBH sites had a much lower canopy height level of Gorse/Broom (maximum height between 2–4 m). The median vegetation heights of the two groups are shown in Figure 1. A Mann Whitney U test on 120 height measurements showed that the difference between the median

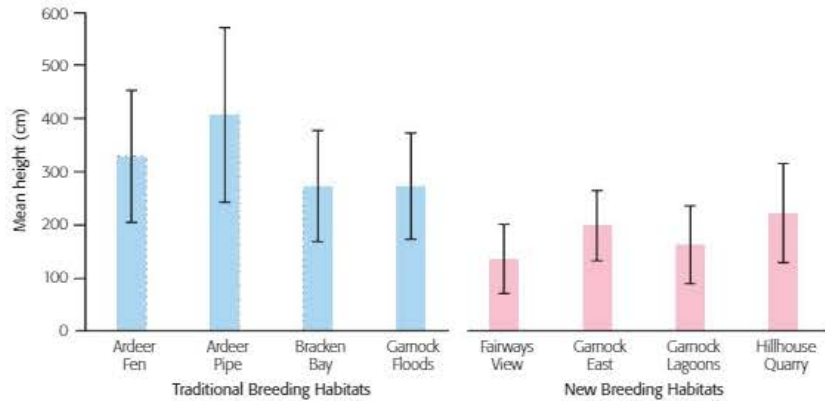


Figure 1. Comparison of the mean heights of vegetation (with standard deviations) in the Traditional Breeding Habitat sites (pale blue) and New Breeding Habitat sites (pale pink), Ayrshire.

vegetation height for the traditional locations (300 cm) and new locations (194.5 cm) was statistically significant ($W=4765$, $P<0.005$, $n=120$). The proportions of the plant species in the two sites are summarised in Figure 2. The traditional sites had a greater range of vegetation with ten species recorded, compared to the new sites which had seven species of vegetation. With the exception of rush *Juncus* sp. at new sites, the species were similar though not the proportions. The differences in vegetation can be seen in Figures 2a & b. Hawthorn was more likely to be found at the traditional sites, while Gorse and Broom were the most common species at new sites. In traditional sites, Hawthorn, Gorse and Bramble accounted on average for 78% of the vegetation. The same

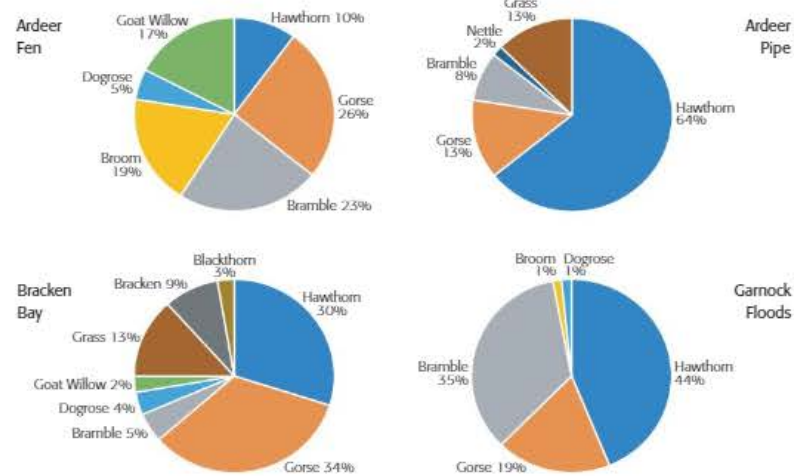


Figure 2a. Proportions of different vegetation in Traditional Breeding Habitats, Ayrshire.

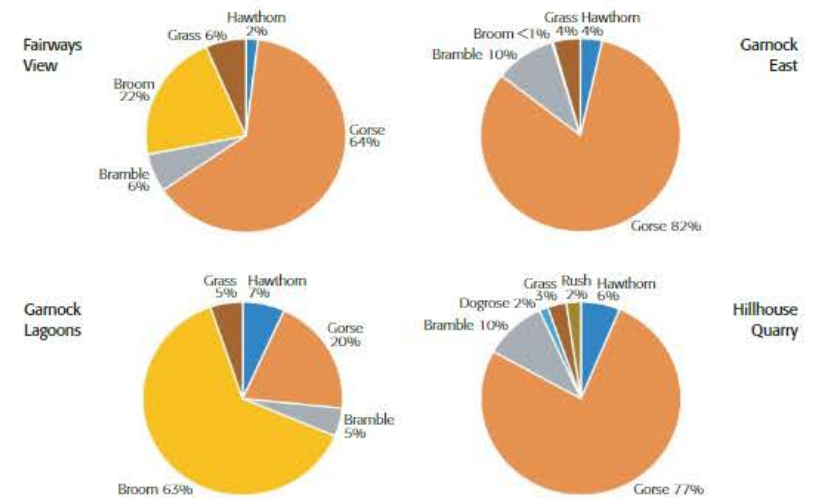


Figure 2b. Proportions of different vegetation in New Breeding Habitats, Ayrshire.

three species accounted for 73% at the new sites. However, the proportions of the three species were quite different. Except for one site, Gamock Lagoons, all the new sites had Gorse cover of more than 60%. Gamock Lagoons only had 20% Gorse cover. However, that site did have three times as much Broom (63%) than any of the other new sites. Interestingly, three of the four NBH sites were discovered after 2006, indicating that this type of breeding habitat has only recently started to be utilised by Lesser Whitethroats - despite traditional habitat being available nearby.

Discussion

In Scotland, Lesser Whitethroats usually breed in open Hawthorn/Blackthorn scrub with a dense understorey of plants such as Bramble, Gorse, Dog Rose and Willow where nests are normally sited at around 1m in height (Byars *et al.* 1991, Byars 2010). Thorn scrub in some coastal locations may be exposed to the prevailing winds and the thorn canopy can appear stunted in height at 2–3 m (pers. obs., Mearns 2012). This thorn scrub habitat is extremely scarce in Ayrshire, hence the restricted breeding distribution there. It seems that for the breeding population to increase, Lesser Whitethroats would have to colonise other habitat types. This appears to be happening now, as Lesser Whitethroats are successfully utilising a new type of breeding habitat in Ayrshire. This could have implications for future range expansion, which up to now may have been limited by the lack of suitable areas of traditional thorn scrub breeding habitat. The traditional type of vegetation is scarce in large parts of Scotland although there are areas with Hawthorn or Blackthorn but no breeding Lesser Whitethroats while in East Lothian some Lesser Whitethroats breed in Sea Buckthorn *Hippophae rhamnoides* (S. da Prato pers. comm.). In the Lothians, where they were found to be colonising in the 1970s, numbers have declined. The estimate of 100 territories in Lothian & Borders in 2007–13 compares to 180–200 in the previous regional tetrad atlas carried out in 1988–94 (Murray *et al.* 2019). There is no evidence that numbers have picked up in Lothian & Borders since 2013 although Dumfries & Galloway has seen a significant population increase of up to 200 pairs (Mearns 2012). Lesser Whitethroats are on the edge of their European range in Scotland and numbers of spring arrivals can fluctuate according to weather patterns at migration time (Marchant *et al.* 1990).



Plate 104. Traditional Breeding Habitat, Garnock Floods, Ayrshire, May 2016.



Plates 105–106. Traditional Breeding Habitat, (left) Ardeer Pipe, Ayrshire, July 2020, (right) Bracken Bay, Ayrshire, June 2011.

The implication for future atlas/survey work is that as well as focusing upon traditional habitat types, there should be equal effort in searching emergent scrub habitat to determine the status of breeding Lesser Whitethroats in Scotland.

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Plates 107–108. New Breeding Habitat, (left) Fairways View, Ayrshire, May 2018, (right) Hillhouse, Ayrshire, April 2018.



Plate 109. New Breeding Habitat, Garnock, Ayrshire, May 2015.

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