# Common Grasshopper Warbler

## *Locustella naevia*

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## Range

The Common Grasshopper Warbler is a trans-Saharan migrant that is widely distributed across temperate areas of the W Palearctic (Simms, 1985). The nominate form breeds across a wide belt of C and N Europe, from the Spanish Cantabrian coastal strip north to Britain and S Scandinavia, and then eastwards to C Asia. In Europe it is fairly common, with an estimated total population of over 650,000 breeding pairs (Birdlife, 2004), the vast majority believed to winter in West Africa and irregularly in small numbers in Morocco (Cramp, 1992; Thévenot et al., 2003). It does not breed in the study area, despite old records of possible broods on the Catalan coast and along the Guadiana river (Tellería et al., 1999) that have not been confirmed by recent studies (Martí & Del Moral, 2003).

## Migratory route

Despite being a common species, captures are scarce due to this warbler's skulking and terrestrial habits and consequently its migratory routes are some of the least known of all in the W Palearctic (Zink, 1973; Cramp, 1992). In autumn, many birds apparently leave Europe in a S (the more western population) or SW direction and thus cross over to Africa through the Iberian Peninsula (Smith, 1965; Thévenot & Thory, 1974; Cramp, 1992). Spain also seems to be a main point of entrance into Europe in spring since it is rare in the C Mediterranean (Spina et al., 1993) and extremely rare in Israel (Morgan & Shirihai, 1997). Moreover, the species' main –or at least best known– wintering grounds lie in the westernmost part of W Africa and it is uncommon but widespread throughout Morocco in spring (present data; Cramp, 1992; Thévenot et al., 2003). This view is further supported by spring recoveries that indicate a SW-NE migration axis from W Africa to Britain and from Spain to NE Europe, while others indicate NE movements from Algeria (fig. 1; Wernham et al., 2002). Migration may take place further eastwards in spring, as suggested by a spring recovery in the Balearics of a bird ringed the previous September in SW Portugal.

In general, the largest daily capture rates and highest frequencies occur in Catalonia and on islands such as Els Columbrets, L'Illa de l'Aire and Cabrera (fig. 2). These insular sites are also some of the most isolated and where birds average lowest body masses (fig. 4), suggesting that to some degree these sites act as attraction points for many birds. But overall, the number of birds trapped in the Balearics and on Els Columbrets is strikingly high and certainly indicates that a substantial number of birds cross the Mediterranean through this area. Despite the figures from Catalonia and many insular sites, the species is relatively less frequent in the wetlands of N Morocco.

## Phenology

The main passage period is relatively short, with most birds passing though the area between late April and mid-May (fig. 3). The first individuals captured at the beginning of April signal the start of a progressive increase in numbers during this month; the last birds are captured at the end of May after a steep decline in numbers from mid-May onwards. Passage is similar in all main areas (Catalonia, the Balearics/Els Columbrets and N Morocco), although the sample size is small from Morocco and data from March are very scarce. In fact, in Morocco passage generally seems to take place earlier, with some birds already passing through in late February, although the bulk of the migration occurs from mid-March to mid-May (Thévenot et al., 2003). Migration also seems to take place a little earlier at Gibraltar and birds pass through the area from late March onwards, mostly during April and early May (Finlayson, 1992). In Switzerland, passage occurs about ten days later than in NE Spain, with the first arrivals usually present by mid-April (Maumary et al., 2007).

## Biometry and physical condition

Mean values for third primary lengths range from 48.6 on Els Columbrets to 49.4 in N Morocco (table 1). Mean values for wing lengths vary from 64.4 in the dry Balearics to 65.0 in Catalonia. Birds from Catalonia have on average longer third primaries than birds on Els Columbrets and in the dry Balearics, which suggests that smaller birds may tend to stop on isolated islands more frequently than larger birds. Third primary length tends to decrease with time (fig. 6).

Mean values of fat score between 2.6 in the dry Balearics and 3.6 in Catalonia, while mean body mass varies from 13.0 to 14.0 at the same sites (table 1). Birds from Els Columbrets and the dry Balearics have the lowest values for fat and weight, and in both cases their averages are significantly lower than for birds trapped in Catalonia (probably due to a higher presence of drop-outs in the sample). However, while individuals captured at N Morocco have an average fat score similar to those captured in Catalonia, their mean body mass is rather similar to that on Els Columbrets/Balearic Islands. The average body mass recorded in Britain in spring is similar to in N Morocco (mean 13.1, n = 24, Baggott, 1986; Cramp, 1992). In Catalonia, mass, fat and physical condition increase significantly during the season, but no clear trend is observed in the dry Balearics, the other area with good number of captures (figs. 7-9).

Available data from SE Morocco shows that birds trapped there are in poorer condition than in N Morocco and body mass and fat reserves are c. 11% and 30% lower, respectively (means of 11.7 and 2.3, respectively, n = 19; Gargallo et al., unpubl.). On the

other hand, the fact that birds from the Balearics and Els Columbrets have similar body mass to those from N Morocco indicates that at least those undertaking sea crossings have to have larger reserves when leaving N Africa. All this suggest that birds gain mass in some areas of NW Africa, both to regain energetic reserves lost crossing the Sahara and in preparation for crossing the Mediterranean. As shown by the state of birds in Catalonia and their stopover behaviour (see below), this species seems to be able to continue gaining mass along its route across S Europe and reach more northern parts of range (*e.g.* Britain) with a remaining fat load of c. 12% (Baggott, 1986).

## Stopover

The percentage of retraps is small in all areas, although slightly higher in Catalonia (7.6%; fig. 5, table 2). Stopover length does not differ between areas and is also rather short (2.5-3.5 days). In Catalonia, however, birds have a positive fuel deposition rate, which is significant when considering retraps of more than one day and higher than on Els Columbrets/Balearic Islands, where birds do not show significant fuel gains. These differences seem to indicate the importance of wetlands as stopover sites during migration, as has been noted in the literature, despite being a species that does not favours these areas for breeding (Cramp, 1992; Baily & Rumsey, 2007). It should be taken into account, however, the fact that the habitat conditions in the dry and isolated islands studied here can be particularly unsuitable for this warbler.

**Table 1.** Mean (± SD), range and sample size of main biometric parameters according to area.

| | n | Wing | Third primary | Body mass | Fat score |
|---|---|---|---|---|---|
| Catalonia | 321 | 65.0 ± 1.9 (60.0-76.0) | 49.3 ± 1.6 (45.0-54.5) | 14.0 ± 1.4 (10.1-18.0) | 3.6 ± 1.3 (0-6) |
| Columbrets | 74 | 65.0 ± 1.9 (60.5-69.0) | 48.6 ± 1.3 (45.5-51.5) | 13.1 ± 1.7 (10.3-17.4) | 2.8 ± 1.6 (0-7) |
| Balearics (dry) | 277 | 64.4 ± 1.8 (60.0-69.0) | 48.9 ± 1.6 (44.0-53.5) | 13.0 ± 1.7 (9.1-17.7) | 2.6 ± 1.6 (0-7) |
| Balearics (wet) | 3 | 64.7 ± 0.6 (64.0-65.0) | 48.8 ± 0.3 (48.5-49.0) | 13.7 ± 1.9 (12.1-15.8) | 3.0 ± 2.0 (1-5) |
| Chafarinas | 1 | | 48.5 | 10.2 | 1.0 |
| N Morocco | 13 | 65.0 ± 2.4 (60.5-69.0) | 49.4 ± 2.0 (46.0-53.0) | 13.1 ± 1.4 (11.0-14.8) | 3.3 ± 1.1 (2-5) |
| S Morocco | 0 | | | | |

**Table 2.** Variation in fuel deposition rate (g/day) according to area and type of retraps involved (mean ± 95% CI and sample size are given).

| | Catalonia | Columbrets | Balearics (dry) | Balearics (wet) | Chafarinas | N Morocco |
|---|---|---|---|---|---|---|
| All retraps | -0.59 ± 0.89 (21) | -0.15 ± 0.66 (24) | 0.21 ± 0.32 (112) | -0.64 ± 0.91 (2) | | |
| Retraps >1 day | 0.19 ± 0.15 (7) | -0.41 ± 0.50 (13) | 0.01 ± 0.26 (51) | | | |

**Figure 1.** Map of recoveries of birds captured in the study area during the study period (March to May).

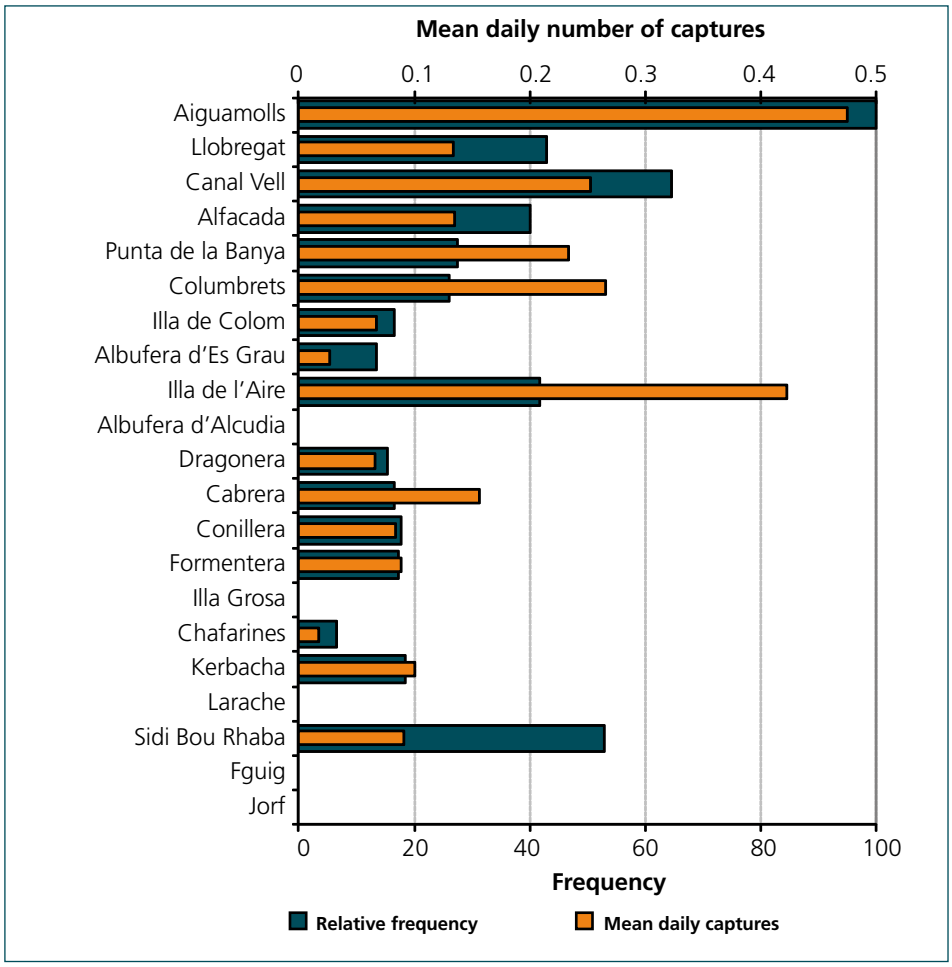


**Figure 2.** Relative frequency of captures and mean daily numbers according to site during the standard period (16 April to 15 May).

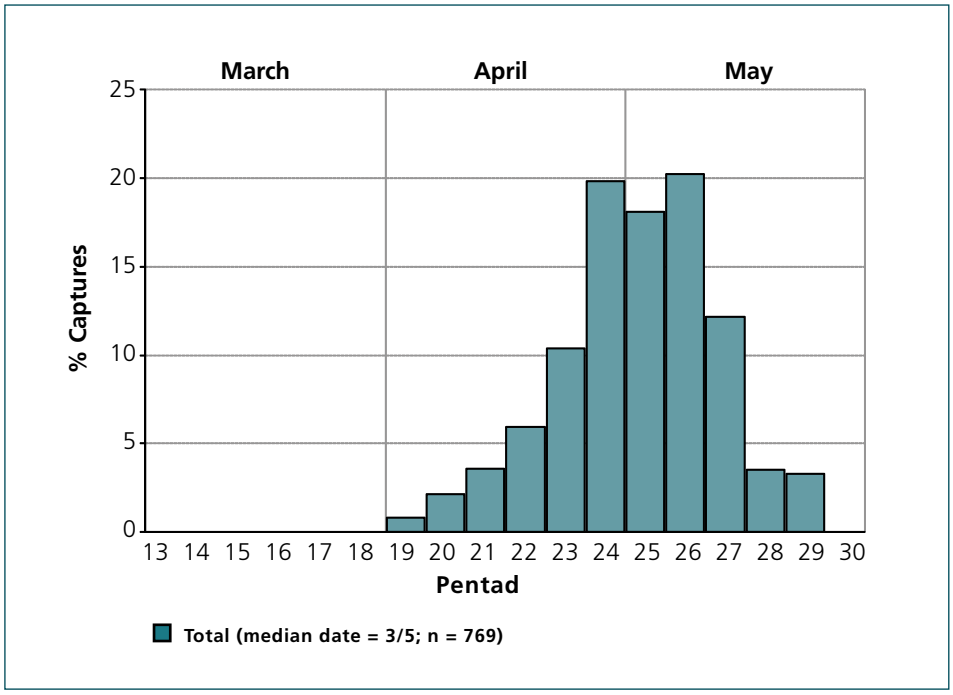


**Figure 3.** Frequency of captures during the study period.

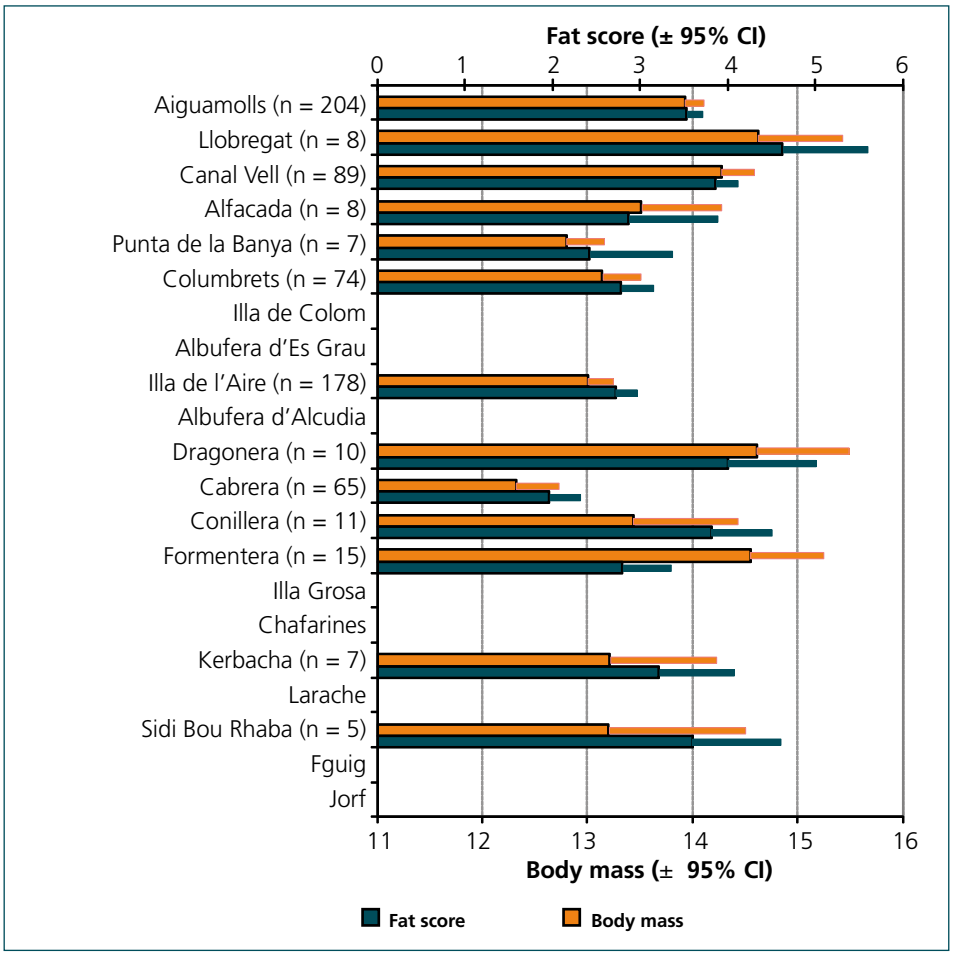


**Figure 4.** Variation in body mass and fat score according to site during the standard period (16 April to 15 May).

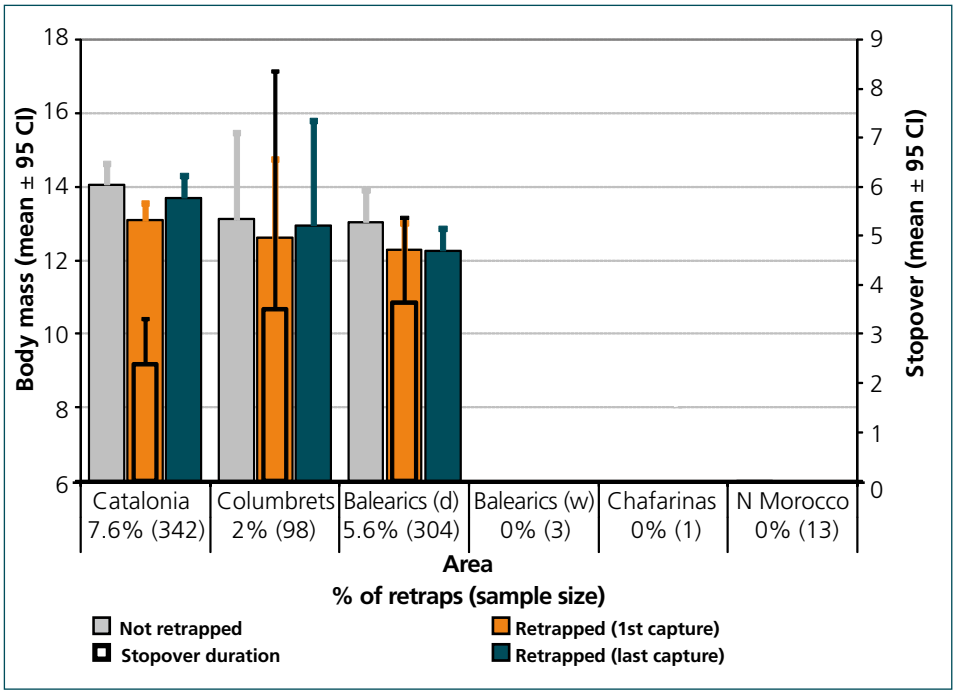


**Figure 5.** Variation in body mass by trapping status, minimum stopover length and frequency of retraps according to area.

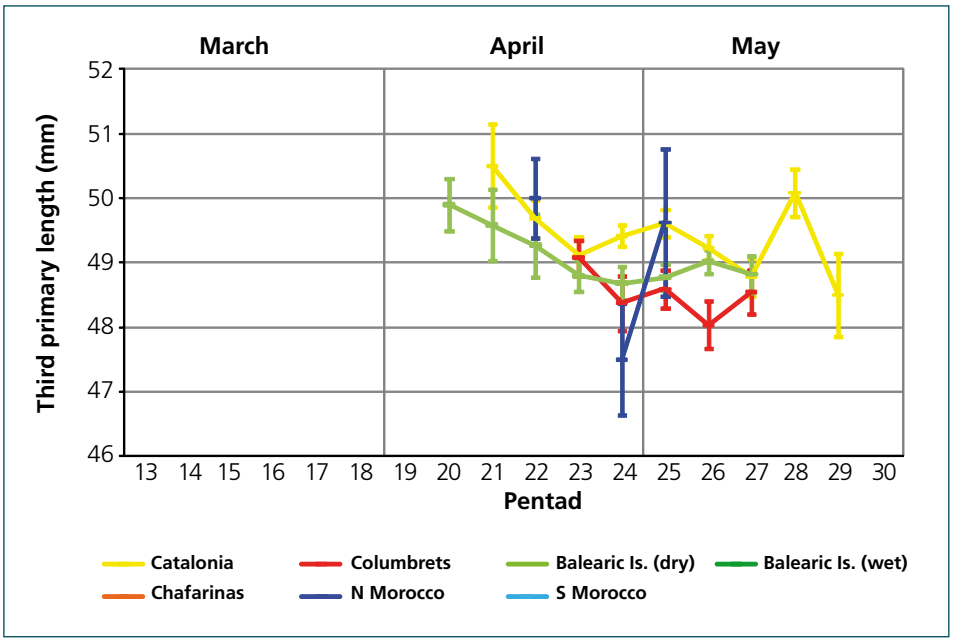


**Figure 6.** Temporal variation of third primary length according to area.

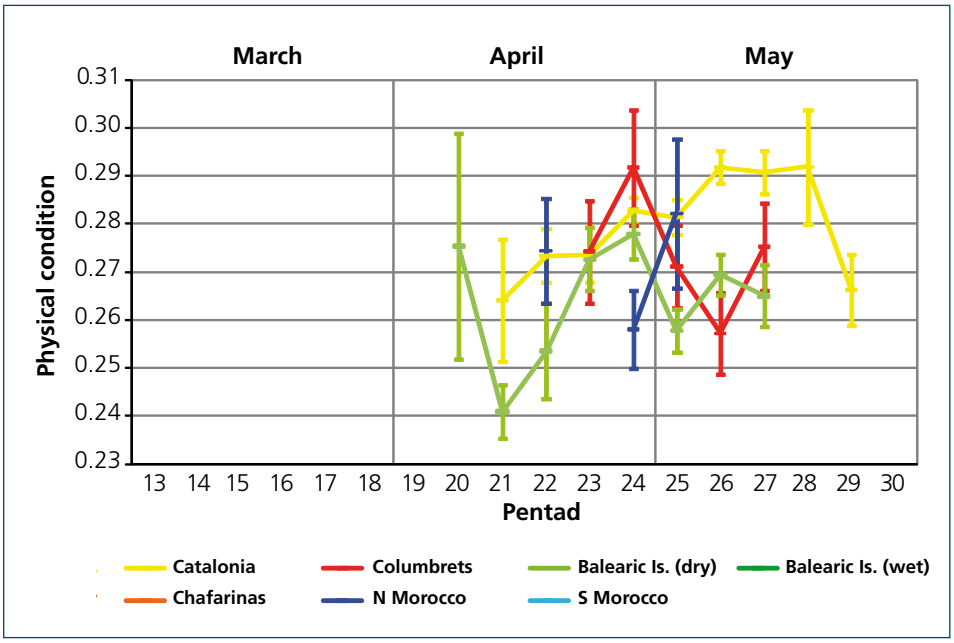


**Figure 7.** Temporal variation of physical condition according to area.

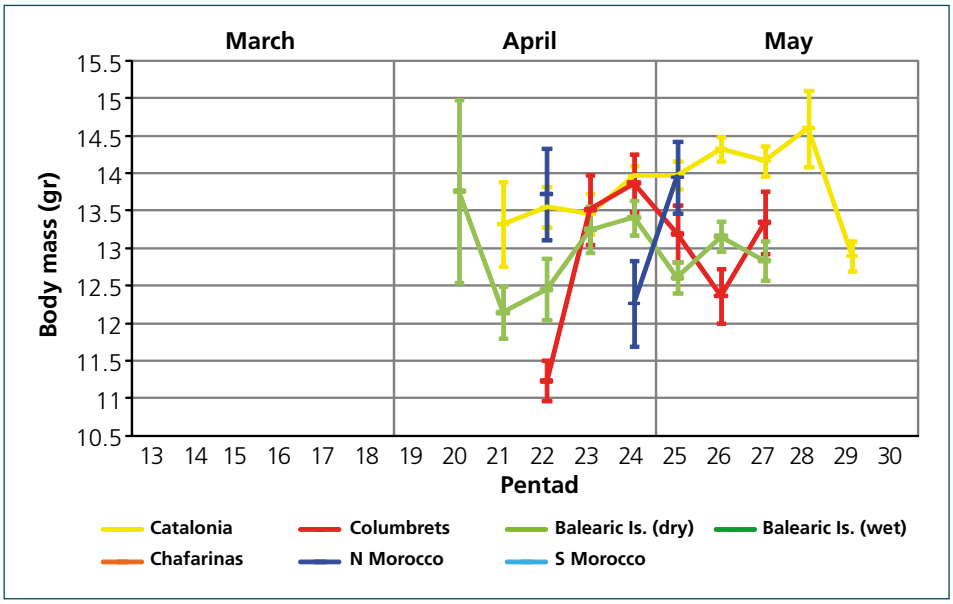


**Figure 8.** Temporal variation in body mass according to area.

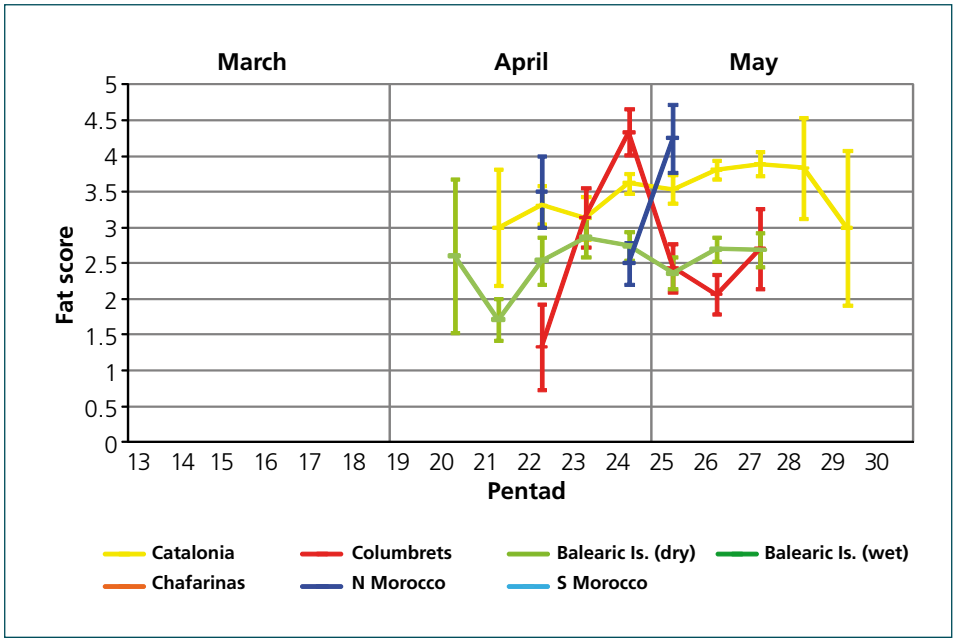


**Figure 9.** Temporal variation in fat score according to area.