Whinchat
Saxicola rubetra

Eduard Amengual

Range

The Whinchat breeds throughout most of C and N Europe east to W Siberia and NW Iran, but is scarce in the Mediterranean region, where is only patchily distributed (Cramp, 1988). Essentially, it is a long-distance migrant that winters in tropical Africa from Senegal to Uganda in a relatively wide belt just south of the Sahara, as well as in smaller numbers in E Africa south to Zambia and Tanzania. It is a rare winter visitor north of the Sahara and to parts of Arabia and Iraq (Snow & Perrins, 1998; Del Hoyo et al., 2005). It does not breed at any of the study sites.

Migratory route

Recoveries show a main SW-NE migratory direction, except for those from Britain, which largely move along a S-N axis (fig. 1); the opposite pattern to that found in autumn (Zink, 1981; Cramp, 1988; Wernham et al., 2002). A bird ringed on Cabrera in spring and recovered in autumn in N Morocco, 824 km to the WSW, shows that birds return along a more esterly route in spring, a pattern followed by many other species (Spina & Volponi, 2009). Another interesting recovery is of a bird ringed on Els Columbrets in spring and recovered three years later in June in NE Algeria, thereby revealing flexibility in the migratory routes taken.

In accordance with the more eastern route followed in spring, the species is much commoner in Mediterranean Spain and the Balearics in spring than in autumn; in the latter season birds pass mostly through C and W Iberia (Telleria et al., 1999; ICO, 2010). Capture data shows that birds are common in Catalonia and in the Balearics/Els Columbrets, suggesting that migration through this area occurs across a broad front, and that birds do not hesitate to cross large stretches of sea (fig. 2). The proof of this is the exceptionally high number of captures on Cabrera, the site with by far the highest capture rate (c. 55% of the whole sample of this species is from this island). The open fields that characterise this site and its relatively large size probably offer the best stopover conditions for this species. It is also very common on the islands of the C Mediterranean (Pettersson et al., 1990; Spina et al., 1993). Few captures are made in N Morocco, probably due to a lack of the preferred habitat at the specific study sites since the Whinchat is much commoner there in spring than in autumn (Zink, 1981; Cramp, 1988; Thévenot et al., 2003).

Phenology

Passage takes place from early April (rarely late March) through to late May, although most birds migrate through the area between mid-April and mid-May (fig. 3). The phenology in Catalonia and the Balearics/Els Columbrets is similar (data from N Morocco is too scarce to be used), although a few more birds tend to appear during the second half of May on the islands. The overall pattern is similar to that already reported for the area, although a few birds are still on passage in early June and occasionally in late February in N Morocco (Finlayson, 1992; Telleria et al., 1999; Thévenot et al., 2003). In the C Mediterranean, migration possibly takes place slightly later, since the median date of passage on Capri occurs 6 days later than in our study area (Pettersson et al., 1990), although the overall phenological pattern is essentially similar (Spina et al., 1993). In S Morocco, some birds appear in early February, but the main passage period falls between April and early May (Thévenot et al., 2003).

Males pass clearly earlier than females (differences in median dates 11 and 10 days in adults and second-year birds, respectively), although adults are only slightly earlier than second-year birds (4 and 2 days earlier in males and females, respectively; fig. 3). The earlier passage of males is also documented in the C and E Mediterranean (Petterson et al., 1990; Morgan & Shirihai, 1997; Messineo et al., 2001), although reported differences on Capri are less marked than in this region (medians differing by three days for both adults and second-year birds; Petterson et al., 1990). Age-related differences detailed on Capri by Petterson et al. (1990) are of a similar magnitude to those reported here (although the medians differ by just one day in both sexes).

Biometry and physical condition

Mean values for third primary lengths range from 56.8 in Las Chafarinas to 57.7 in Catalonia, the latter average being significantly higher than on Els Columbrets and in the dry Balearics (table 1). Overall, birds trapped in the W Mediterranean are slightly smaller than those reported from the C Mediterranean (mean 57.7, n = 15,280; Messineo et al., 2001), perhaps due to more northern European birds migrating through Italy (*cf.* Spina & Volponi, 2009). Third primary lengths show a tendency to decrease with time (fig. 6), in a similar way to that previously found in the C Mediterranean (Pettersson et al., 1990; Spina et al., 1993), a fact undoubtedly due to differential migration between sexes and age-classes described above (the later migrating females and second-year birds having shorter wings).

Mean fat scores in most areas are fairly low, ranging from 0.7 in Las Chafarines to 3.6 in N Morocco, showing, like physical condition, an overall increase during the migratory period (fig. 9). The overall mean (2.6) is only slightly higher than that reported from the C Mediterranean (mean 2.1, n = 15,077; Messineo et al., 2001). Averages are similarly lower in S Morocco and on Els Columbrets and

Las Chafarinas, significantly so when compared with the other areas. Higher fat loads later in the season may reflect the fact that later arriving birds (more females) are under less energetic stress (having less need to migrate faster) or the improving conditions they encounter as the season progress. Birds captured in S Morocco have the worst physical condition, significantly lower than in N Morocco, Catalonia and in the dry Balearics (table 1, fig. 7).

No temporal trend is obvious in body mass, which remains rather constant throughout the migration period. Mean values vary from 17.6 in N Morocco to 13.8 in S Morocco and Las Chafarinas. Averages are similarly lower in S Morocco and on Els Columbrets and Las Chafarinas, significantly so when compared to N Morocco, Catalonia and the dry Balearics. Mean body masses in S Britain and Wales (16.6, n = 72; Cramp, 1988) are only slightly higher than in Catalonia, while those reported from Gibraltar (16.0, n = 10; Finlayson, 1981) are similar to Catalonia and Balearics. Birds trapped in the Balearics show, however, a rather higher body mass than those from the C Mediterranean islands (mean 14.7, n = 15,396; Messineo et al., 2001), the latter being closer to figures for Els Columbrets. The average in N Morocco is somewhat higher than that reported from a similarly limited sample from N Tunisia (mean 16.7, n = 5; Waldenström et al., 2004). In S Morocco figures are close to those obtained at the nearby sites of Jorf (14.1, n =15; Maggini & Bairlein, 2011) and Merzouga (14.2, n = 6; Gargallo et al., unpubl.), suggesting that figures are representative of the area. These figures are also similar to those from Eilat in the E Mediterranean on the northern edge of the desert (13.8, n = 80; Morgan & Shirihai, 1997).

Birds trapped in N Morocco are *c.* 24-28% heavier than in the south of the country. Although data from N Morocco is scarce, data from N Tunisia (likewise somewhat limited) also show a distinctly higher average (18-21% in this case), suggesting that the difference between northern coastal sites and those located just north of the Sahara are important and that birds fatten up considerably in NW Africa. Since body mass is similar from S Iberia up to Britain, it would seem that this species moves though the continent using short flight bouts and does not involve long stopovers or great changes in mass. Only on more isolated and distant islands (from the African coast) such as Els Columbrets do birds show distinctly lower body mass than in N Morocco (*c.* 15%).

Stopover

The percentage of retraps and mean stopover length is very low in all areas, indicating that the turnover of birds is very high (table 2, fig. 5). Birds remaining in the dry Balearics are in poorer condition at first capture than those not trapped again, indicating some reluctance in birds in better condition to stay at these sites. A similar but non-significant pattern is observed on Els Columbrets: birds on these islands have significant negative fuel deposition rates (when using all dataset), unlike in the dry Balearics where the tendency is positive (but not significant). In Catalonia the fuel deposition rate is also positive (excluding one-day retraps), but likewise not significant. These results indicate that birds stopping at the more isolated and distant sites (Els Columbrets) are not only those in poorest condition, but also those that benefit least from their stays (although the sample size is extremely low). The sample size from N Morocco is too small to throw light on the situation in this area.

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

	n	Wing	Third primary	Body mass	Fat score
Catalonia	336	76.2 ± 2.0 (70.0-82.5)	57.7 ± 1.8 (52.0-62.5)	16.1 ± 1.4 (11.9-20.7)	2.7 ± 1.2 (0-5)
Columbrets	103	76.4 ± 2.2 (70.5-81.0)	56.9 ± 2.0 (50.5-61.0)	15.1 ± 2.1 (10.5-21.1)	1.3 ± 1.3 (0-7)
Balearics (dry)	1,726	75.6 ± 2.2 (70.0-82.0)	57.0 ± 2.0 (50.5-62.5)	16.0 ± 2.0 (9.9-24.8)	2.5 ± 1.3 (0-7)
Balearics (wet)	12	76.5 ± 2.1 (73.0-80.0)	57.3 ± 1.4 (55.0-59.0)	16.3 ± 1.8 (14.7-19.8)	3.3 ± 1.1 (2-5)
Chafarinas	9		56.8 ± 1.5 (55.0-59.0)	13.8 ± 1.0 (12.1-15.7)	0.7 ± 0.7 (0-2)
N Morocco	5	75.1 ± 1.0 (74.0-76.0)	56.9 ± 1.1 (55.0-58.0)	17.6 ± 3.4 (13.8-22.8)	3.6 ± 1.7 (1-5)
S Morocco	17	76.4 ± 2.3 (71.5-81.0)	57.4 ± 1.4 (54.5-60.0)	13.8 ± 1.5 (11.4-17.0)	1.6 ± 1.0 (1-5)

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	-0.10 ± 0.55 (10)	-1.10 ± 0.34 (3)	0.10 ± 0.27 (41)			
Retraps >1 day	0.45 ± 0.64 (5)		0.08 ± 0.19 (23)			

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

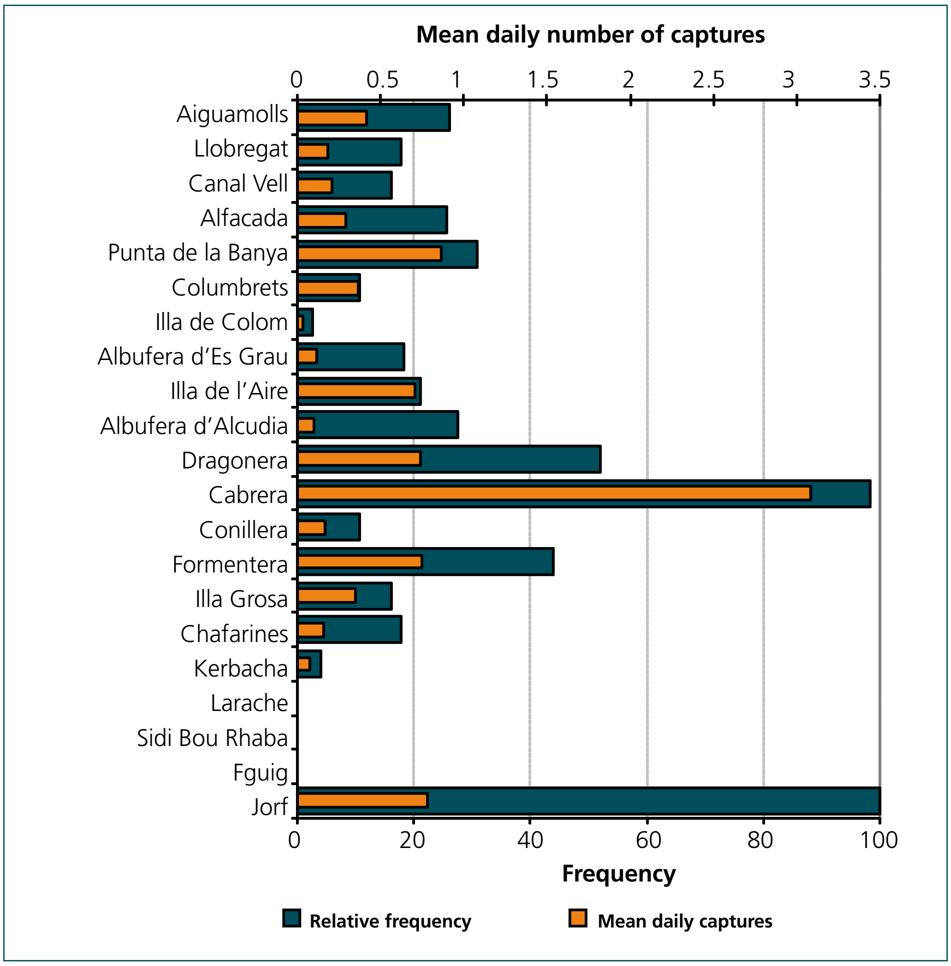


Figure 2. Relative frequency of captures and mean daily numbers according to site during the standard period (16 April to 15 May).

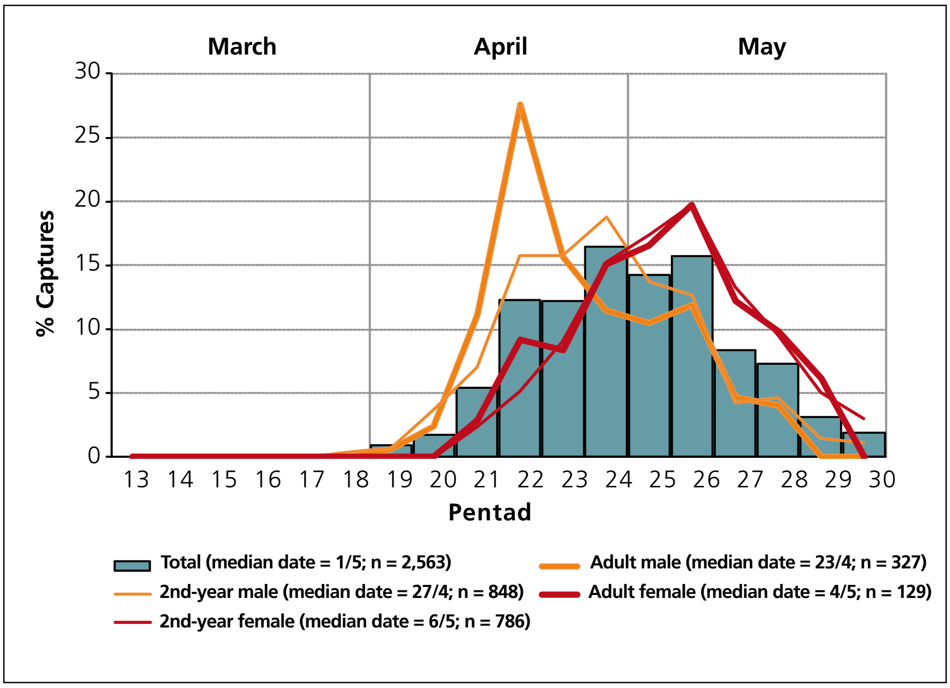


Figure 3. Frequency of captures during the study period.

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

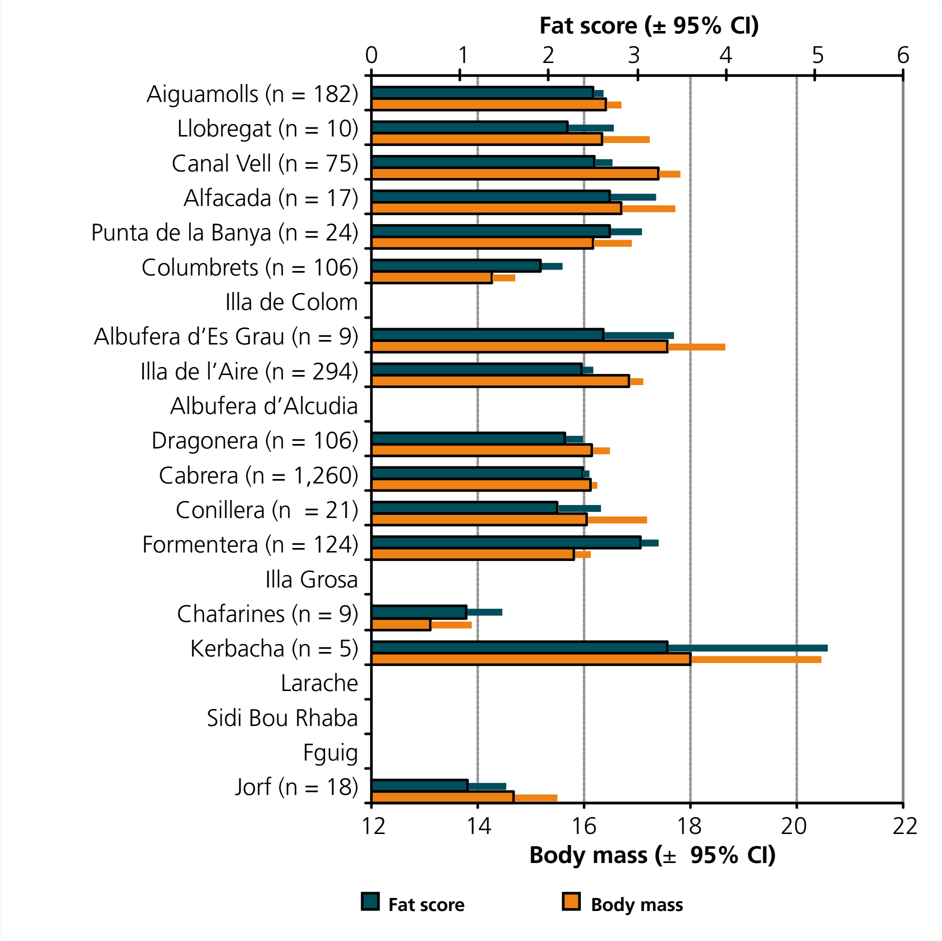
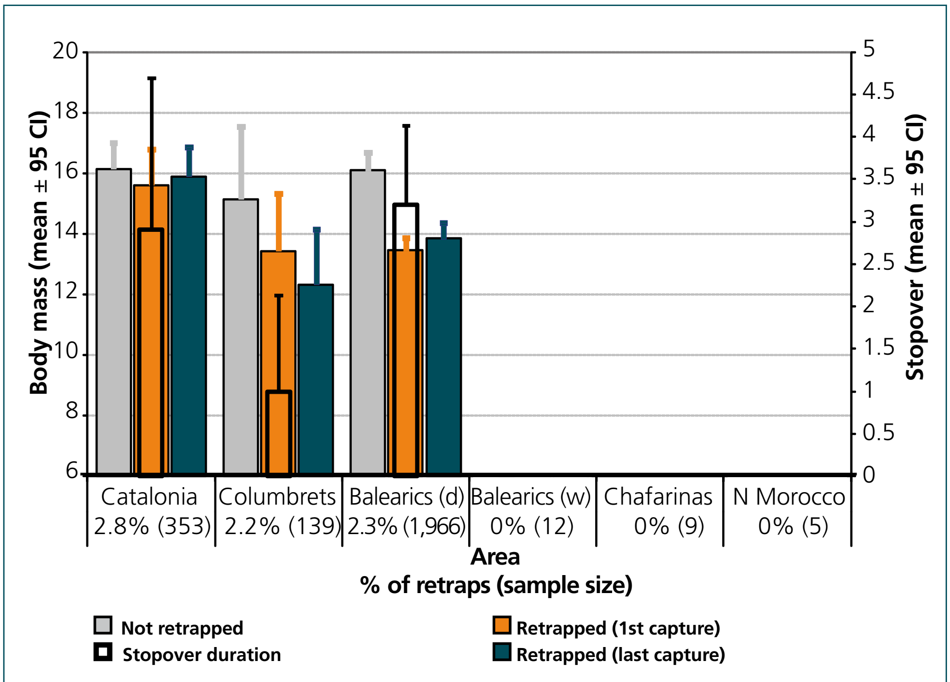


Figure 5. Variation in body mass by trapping status, minimum stopover length and frequency of retraps according to area.



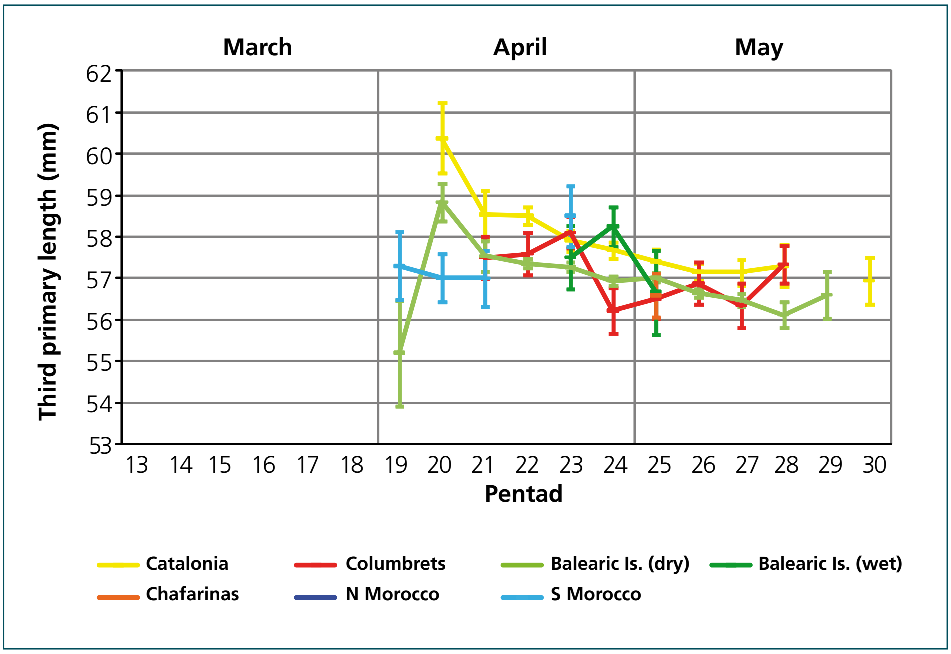


Figure 6. Temporal variation of third primary length according to area.

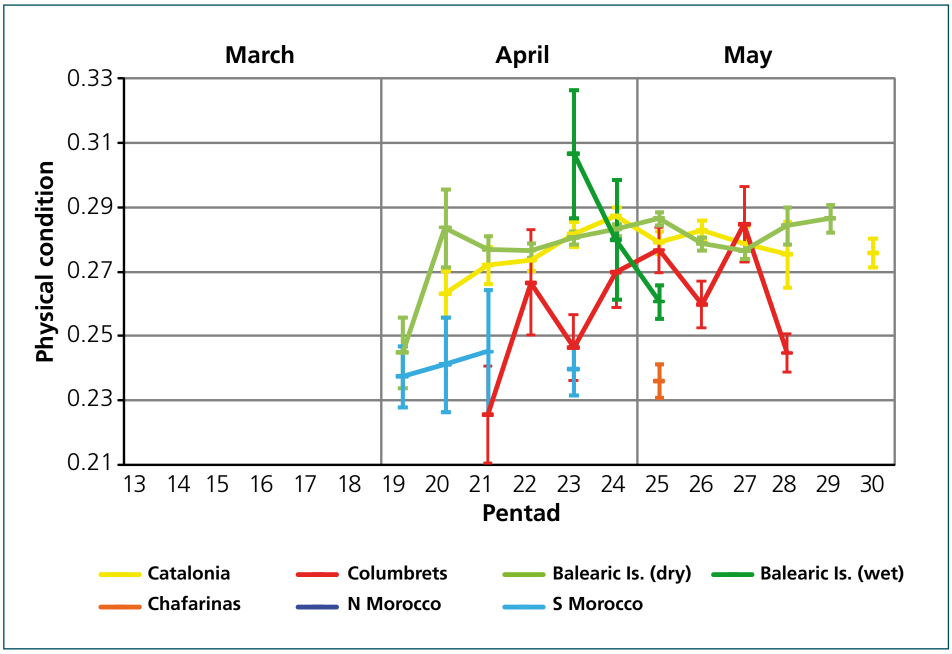


Figure 7. Temporal variation of physical condition according to area.

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

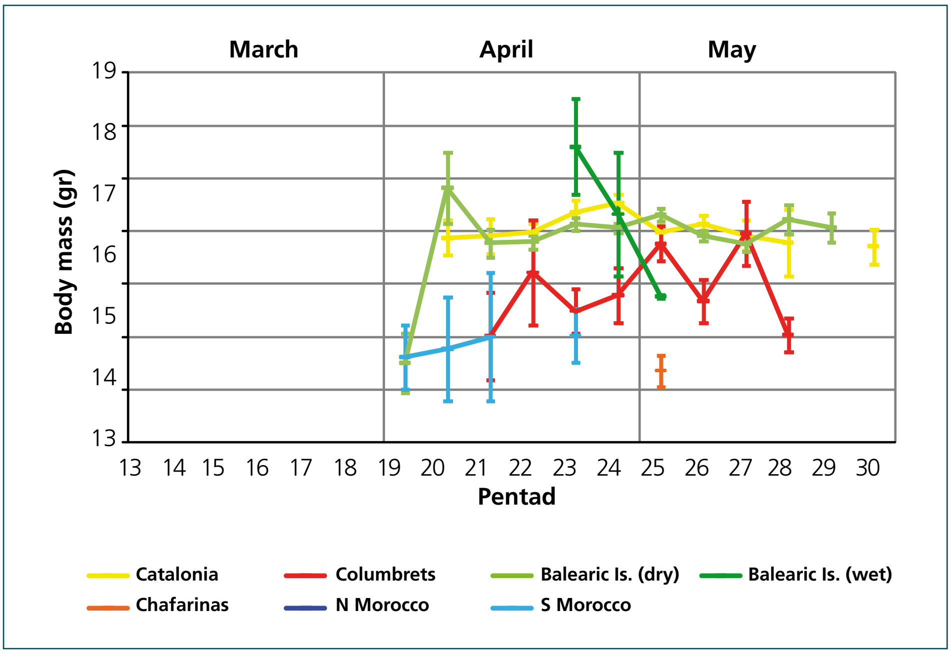


Figure 9. Temporal variation in fat score according to area.