Icterine Warbler *Hippolais icterina*

Pere Garcias

Range

The Icterine Warbler breeds in temperate and boreal regions in middle and upper latitudes of the W Palearctic, from NW France north to Scandinavia and east to *c.* 85ºE (Cramp, 1992; Bairlein et al., 2006). It winters in sub-Saharan Africa south of the equator (Moreau, 1972; Cramp, 1992) and is considered a rare migrant along the Iberian Mediterranean coast, but more regular in the Balearics (Costa, 1990; Garcias, 1992; Tellería et al., 1999). It does not breed in either Spain or Morocco.

Migratory route

The geographical variation in the frequency of captures indicates that this species is more abundant to the east, being particularly common in the Balearic Islands, especially in eastern sites such as Cabrera and L'Illa de l'Aire (fig. 2). In Morocco this species is concentrated in the extreme NE of the country, where numbers are low but seemingly regular. Our data agree with the known migratory behavior of this species, which reaches breeding grounds along a due S-N or S-NNW trajectory that generally crosses the central Mediterranean (Pettersson et al., 1990; Spina et al., 1993; Pilastro et al., 1998). In spring, migration takes place along a more westerly route than in autumn (Moreau, 1972; Cramp, 1992), explaining the higher frequency of spring records in the W Mediterranean (Cramp, 1992; Tellería et al., 1999; Thévenot et al., 2003; ICO, 2010).

The only available recovery refers to an interesting record of a bird ringed on Cabrera (Balearics) in May 1992 and recovered in May 1994 on another island along the S Tyrrhenian coast in Italy, which suggests that the spring migratory route can vary widely from year to year.

Phenology

Migration starts during the second half of April with a small number of captures and then rises quickly to a peak in mid-May (fig. 3). The relatively high number of captures at the end of the study period indicates that passage still continues relatively abundantly into early June. Overall, the pattern is similar to that already reported for SW Europe and NW Africa (Blondel & Isenmann, 1981; Cramp, 1992; Spina et al., 1993; Tellería et al., 1999; Thévenot et al., 2003; Isenmann et al., 2005). The median date of passage is similar to that reported for the C Mediterranean (Spina et al., 1993; Pettersson et al., 1990).

Biometry and physical condition

Mean values for third primary lengths range from 60.0 in N Morocco to 61.4 in Catalonia, very similar to the values reported in the C Mediterranean (61.3, n = 515; Spina et al. 1993; table 1). Mean values for wing lengths vary from 77.4 in N Morocco to 79.2 in Els Columbrets, within the range reported from other parts of Europe (Cramp, 1992). Third primary length tends to decrease with time, probably due to the later passage of females (females are shorter winged and are known to reach breeding grounds later than males; Cramp, 1992; fig. 6). In the C Mediterranean, third primary values increase with time at some sites and decrease at others (Spina et al., 1993).

Mean fat score values range from 0.7 on Els Columbrets to 3.8 in N Morocco (table 1). Mean body mass varies from 11.5 to 14.2-14.6, again with the lowest values on Els Columbrets, while the highest values are from the few birds trapped in N Morocco and the wet Balearics. Physical condition is higher in N Morocco than in Catalonia; birds from the dry Balearics have similar figures to those from Catalonia but significantly higher than on Els Columbrets (fig. 8). The very few birds trapped in the wet Balearics are in distinctly better condition than those from the dry Balearics (table 1), in terms of both body mass and fat reserves and physical condition. Mean body mass in the dry Balearics and on Els Columbrets are similar to that reported in the C Mediterranean (mean 12.0, n = 515; Spina et al., 1993). In N Morocco mean body mass is significantly higher than in the other areas (except wet Balearics), and is also higher than those reported for N Tunisia (mean 13.4, n = 21; Waldeström et al., 2004). Available data from S Morocco indicates that birds arrive there with lower body mass and fat reserves (mean 11.4 and 2.8 respectively, n = 9; Gargallo et al., unpubl.), suggesting that birds regain substantial energetic reserves in N Morocco and, apparently, in N Tunisia as well. The fact that this warbler is much commoner in NW Africa in spring than in autumn (Zink, 1973; Cramp, 1992; Thévenot et al., 2003; Isenmann et al., 2005) further supports this view of this area as a reliable stopover site.

Globally, fat score, body mass and condition index show a slight but significant increase during the course of the migration period (figs. 7-9), suggesting that later on in the season more birds are in less of a hurry to migrate faster, or that environmental conditions encountered en route and/or in tropical Africa are better.

Stopover

Retraps are globally low but more frequent in Catalonia than in the dry Balearics or on Els Columbrets, suggesting that birds specifically avoid to stay in more isolated areas with unsuitable habitat (fig. 5, table 2). Otherwise, there are no significant differences in terms of body mass or stopover length, probably due to the very small sample sizes.

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

	n	Wing	Third primary	Body mass	Fat score
Catalonia	47	79.0 ± 2.0 (74.0-83.5)	61.4 ± 1.5 (57.0-64.0)	12.8 ± 1.2 (10.0-16.0)	2.5 ± 1.2 (0-6)
Columbrets	27	79.2 ± 2.2 (73.0-82.5)	60.9 ± 1.8 (58.0-65.5)	11.5 ± 1.5 (9.2-14.7)	0.7 ± 0.8 (0-3)
Balearics (dry)	379	78.8 ± 2.0 (73.0-83.5)	61.1 ± 1.9 (56.0-66.0)	12.6 ± 1.4 (9.1-17.8)	2.2 ± 1.2 (0-5)
Balearics (wet)	3	78.8 ± 1.0 (78.0-80.0)	61.0 ± 1.3 (60.0-62.5)	14.6 ± 0.6 (14.1-15.2)	3.0 ± 0.0 (3-3)
Chafarinas	1		60.0	12.5	2.0
N Morocco	10	77.4 ± 2.4 (75.0-81.0)	60.0 ± 2.2 (57.5-63.5)	14.2 ± 1.5 (11.8-16.1)	3.8 ± 1.3 (1-6)
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	0.26 ± 0.43 (5)		-0.07 ± 0.19 (22)			
Retraps >1 day	0.06 ± 0.22 (3)		0.06 ± 0.17 (13)			

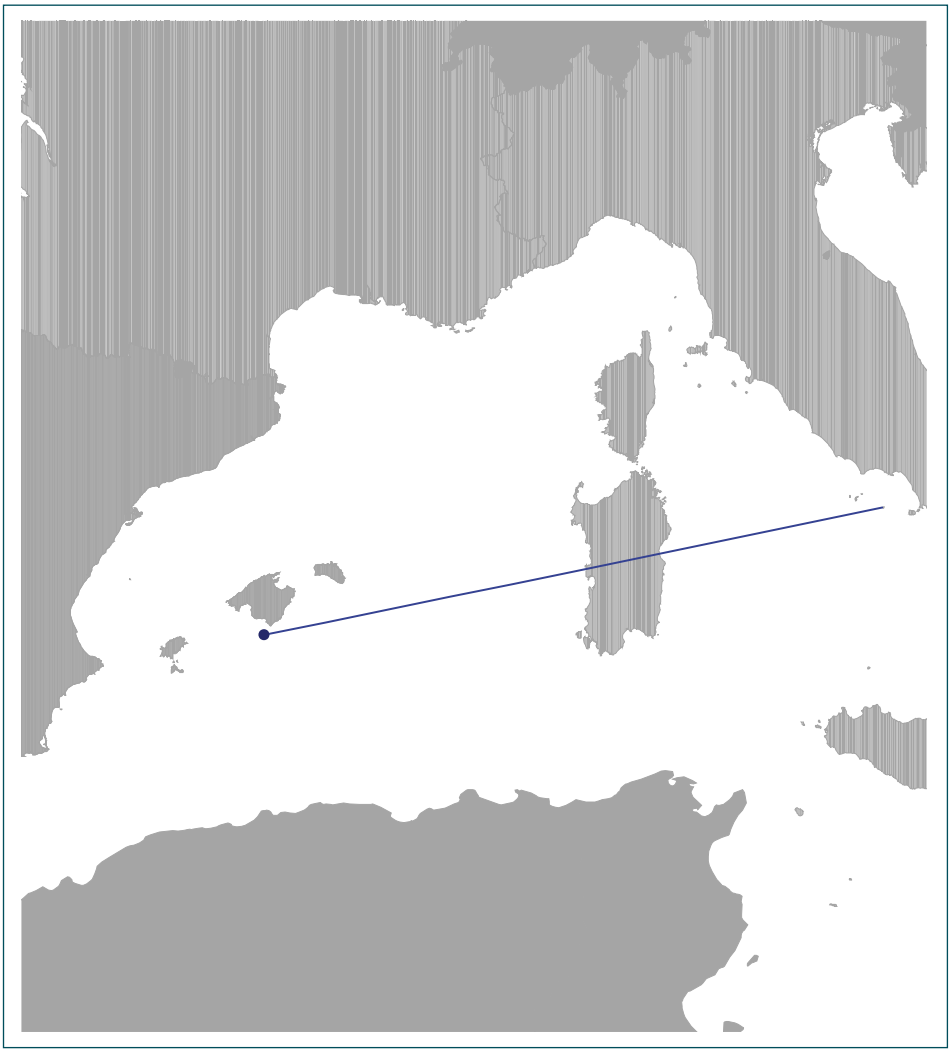

Figure 1. Map of recoveries of birds captured in the study area during the study period (March to May).

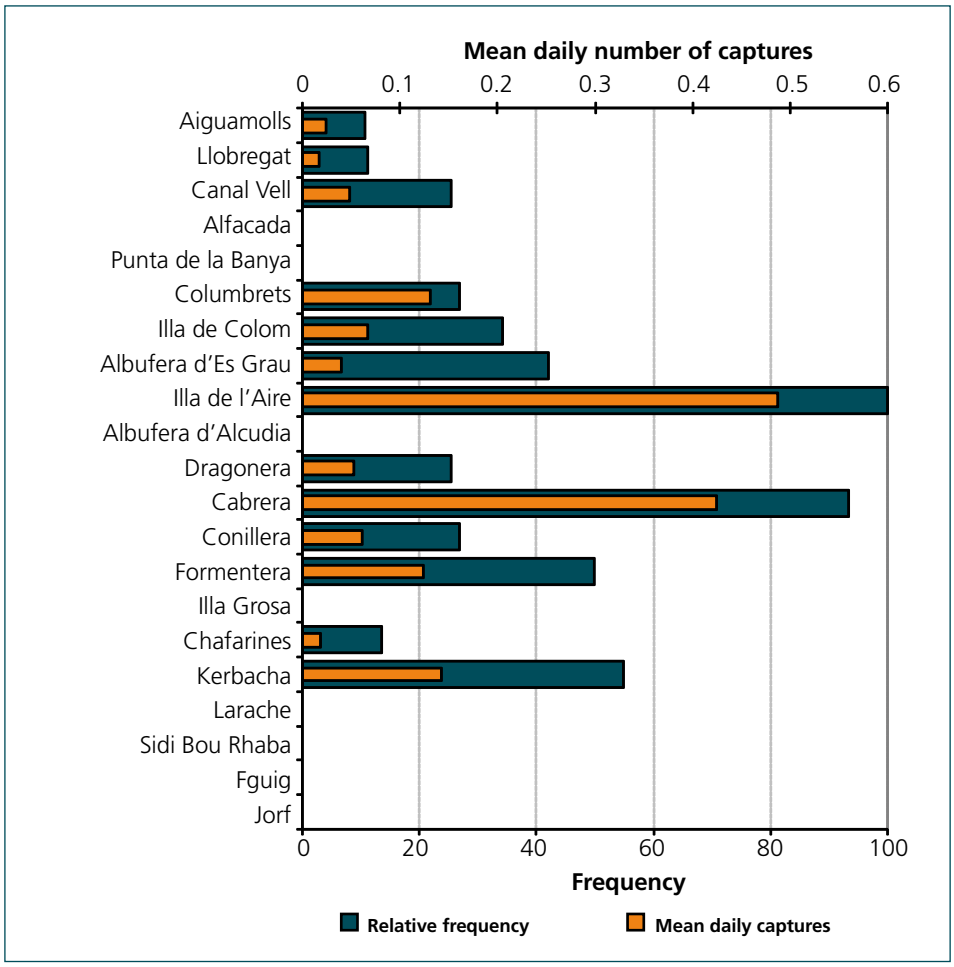

Figure 2. Relative frequency of captures and mean daily numbers according to site during the standard period (16 April to 15 May).

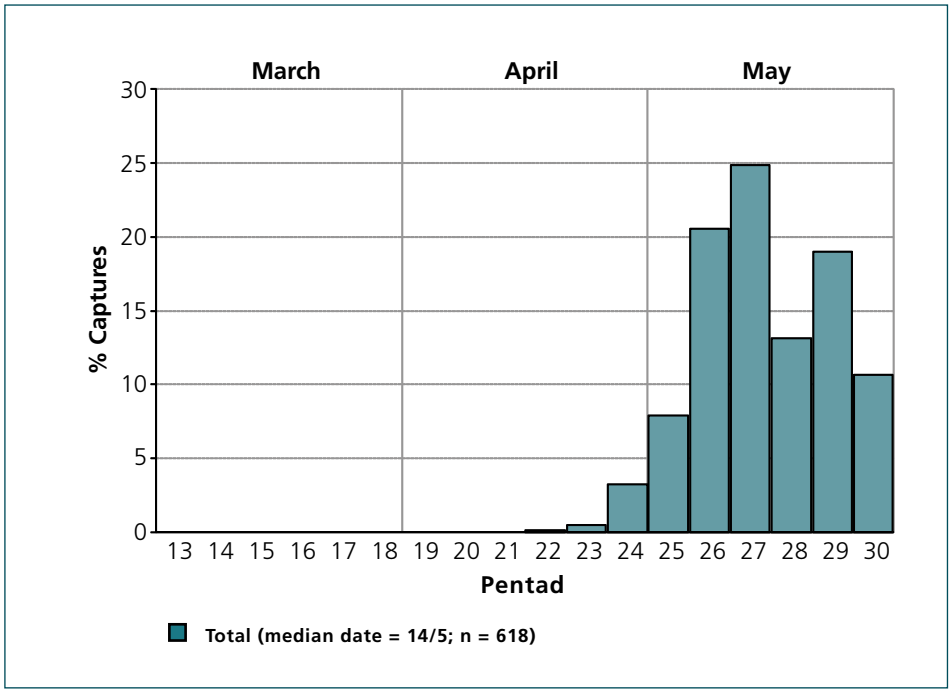

Figure 3. Frequency of captures during the study period.

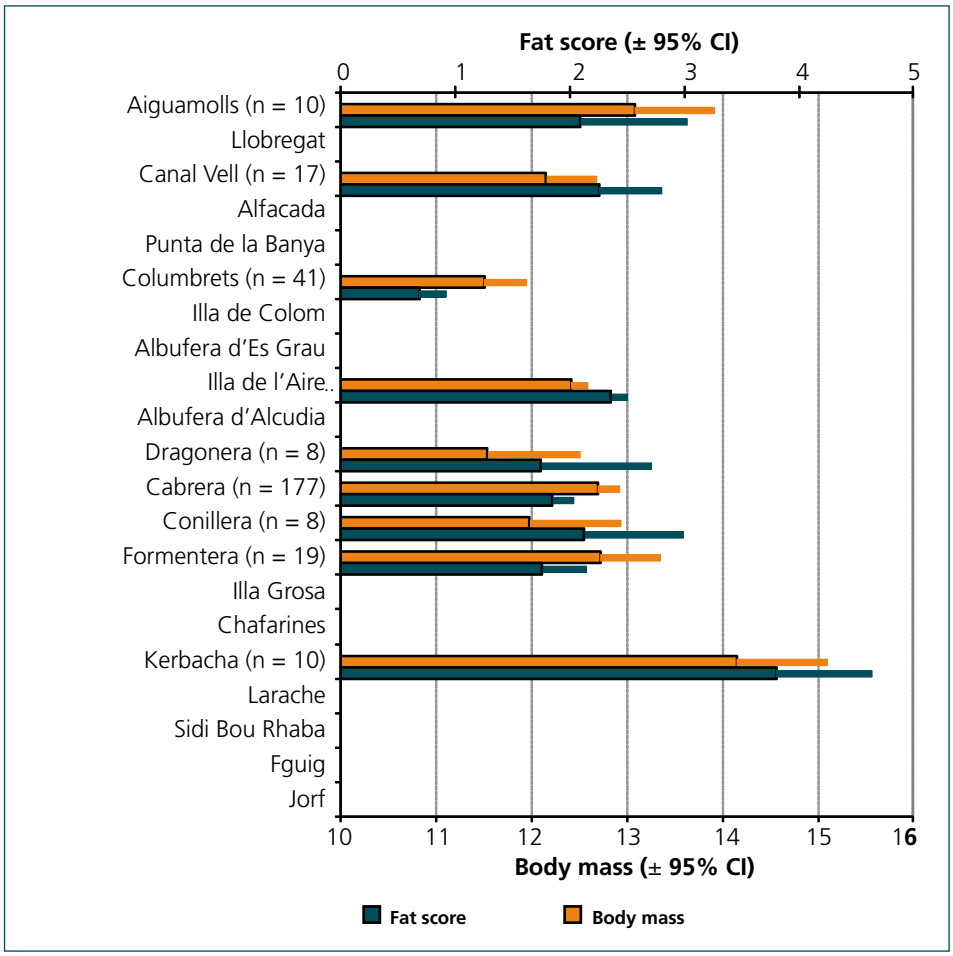

Figure 4. Variation in body mass and fat score according to site during the standard period (16 April to 15 May).

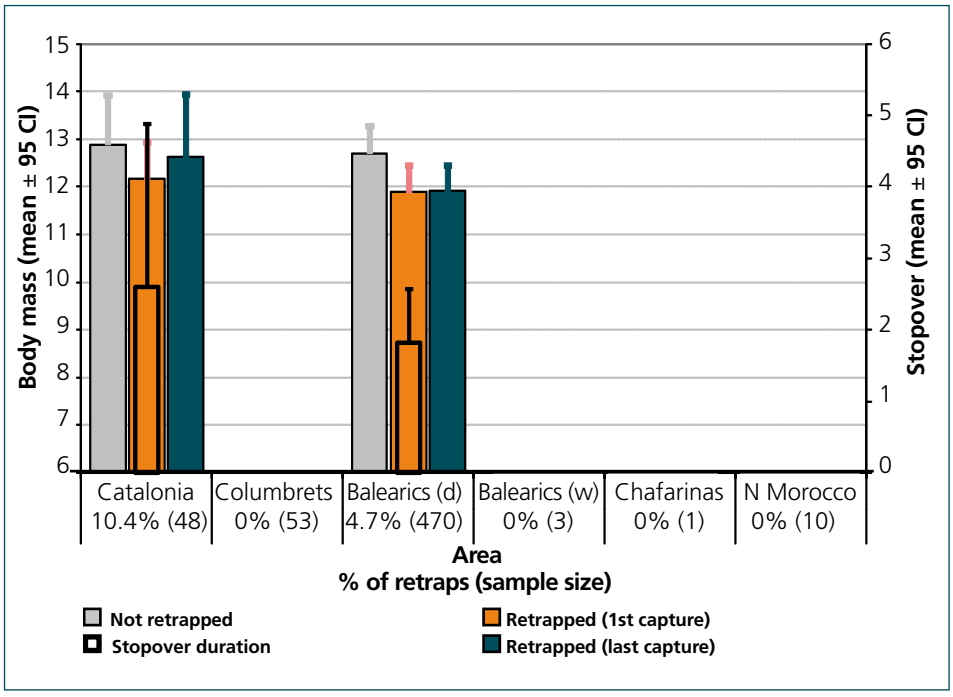

Figure 5. Variation in body mass by trapping status, minimum stopover length and frequency of retraps according to area.

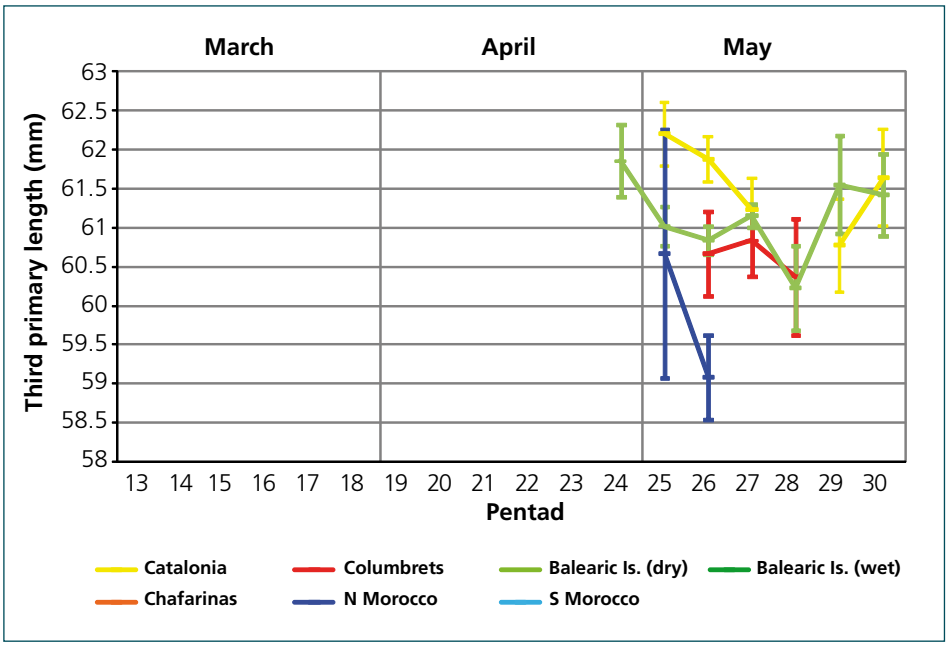

Figure 6. Temporal variation of third primary length according to area.

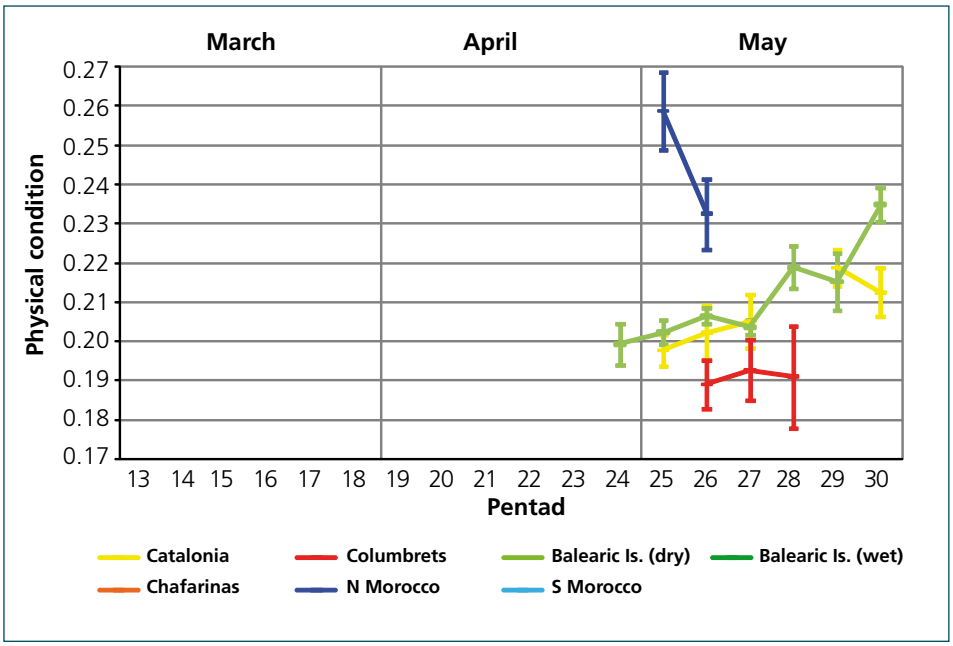

Figure 7. Temporal variation of physical condition according to area.

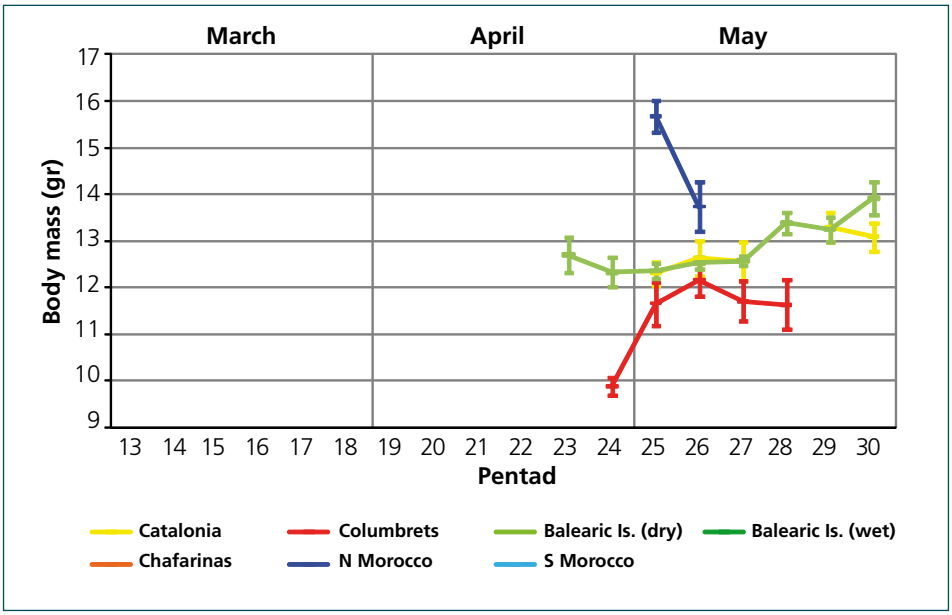

Figure 8. Temporal variation in body mass according to area.

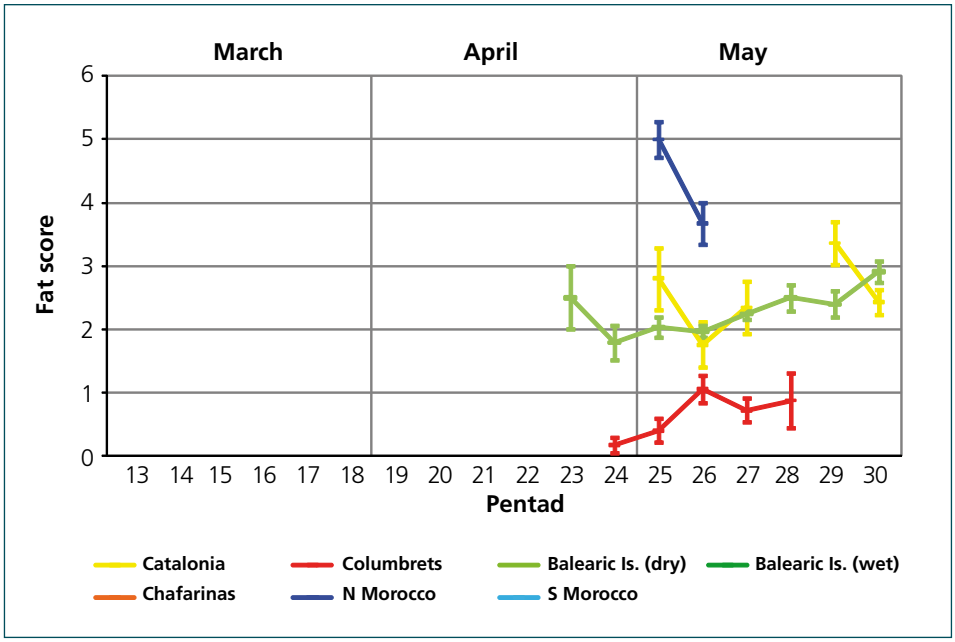

Figure 9. Temporal variation in fat score according to area.