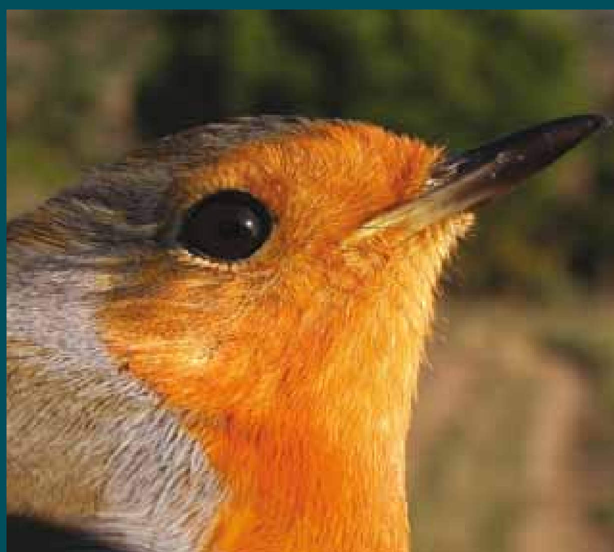
European Robin

Erithacus rubecula

José Ignacio Dies



Range

The European Robin is a polytypic species with up to eight races showing slight clinal changes in size and colour, which breeds from Atlantic Europe south to N Africa and east to W Siberia and N Iran (Cramp, 1988). Most populations are partially migratory, although Robins are totally migratory in the north-east and probably largely sedentary in the extreme south. There are notable winter concentrations in the Mediterranean Basin, but it is scarce in N Africa south of the coastal strip and rare below 32°N (Cramp, 1988; Adriaensen & Dhondt, 1990; Pérez-Tris et al., 2000; Thévenot et al., 2003). As a consequence of differential migration, female European Robins outnumber males in southern wintering regions since the species shows a strong latitudinal segregation of the sexes (Catry et al., 2004a).

The Robin does not breed at any of the study sites, but is a common wintering species in the wet Balearics, N Morocco, Catalonia and on the larger islands of the dry Balearics (Cabrera, Formentera), although even there the majority of birds are migrants. In S Morocco and on the smallest islands no or very few wintering birds are present (L'Illa de l'Aire, Conillera, Els Columbrets, L'Illa Grossa and Las Chafarinas).

Migratory route

Ringing recoveries show a prevailing SW-NE direction in birds of the nominate *rubecula* range (fig. 1). There are two recoveries from southern Great Britain, possibly corresponding to the race *melophilus*, despite a lack of recoveries of this taxon from outside its range (Wernham et al., 2002). Recoveries reach 61°N in the Scandinavian Peninsula and NW Russia, but do not occur far from the coast in Morocco and Algeria; the southernmost recoveries are at 32°N in NW Morocco.

The frequency and number of captures is lowest in Morocco and on Las Chafarinas, although similar values are found along the coast of the Iberian Peninsula and the Balearic Islands (fig. 2); the sole exception is Illa Grossa, which accounts for a large proportion of captures, probably due both to an important influx of migrants to coastal Spain and the island effect.

Phenology

Migration through the W Mediterranean starts before the beginning of the study period, that is, usually early and mid-February (Cramp, 1988; Bueno, 1998; Tellería et al., 1999; Thévenot et al., 2003). During early March the influx of birds is still low and the main passage period occurs between mid-March and early April (fig. 3). Data from Els Columbrets and L'Illa de l'Aire, where wintering birds are very scarce, confirm this phenological pattern. Adults tend to pass marginally earlier than second-year birds, a pattern that is repeated in Catalonia and on the Balearics (little data available from Morocco). In accordance with published data (Cramp, 1988), passage decreases markedly during the second half of April and only a few stragglers occur as late as early May (fig. 3). In the Tyrrhenian Islands, however, spring migration is largely finished by the end of March (Pettersson et al., 1990; Spina et al., 1993).

Biometry and physical condition

Mean third primary length ranges from 52.5-52.6 in Morocco to 54.5 in Catalonia, while the mean values for wing length vary from 69.8 in N Morocco to 72.4 on Els Columbrets and in Catalonia, within the range reported from the C Mediterranean (table 1; Spina et al., 1993; Waldenström et al., 2004). Morphometric characteristics of the European Robin vary with geographical region, age and sex, with longer wings found in northern populations, adults and males (Domínguez et al., 2007). Third primary lengths show a significant decreasing trend over time (fig. 6), probably reflecting seasonal changes in the age and sex of migrants; the smallest values are recorded in Morocco. These results agree with the migration patterns documented for this species, with males arriving earlier on breeding grounds than females (Tøttrup & Thorup, 2008), and suggest some degree of differentiation in the populations present in Morocco and NE Spain.

Mean values for fat scores vary between 1.1 on Els Columbrets and 3.6 in N Morocco, while the mean body mass varies from 14.7 to 17.6 at the same sites (table 1). Fat shows a general temporal increase, although the opposite is found in physical condition and mass (fig. 9), the latter probably due to the decrease in size indicated by third primary length. Mean fat is highest in N Morocco, intermediate in Catalonia and the wet Balearics, and lowest in the dry Balearics and, particularly, on Els Columbrets (fig. 9). Physical condition shows a similar pattern, although in this case Catalonia and the dry Balearics have similar values (fig. 7). Higher body mass and better physical condition in birds from the wet Balearics compared to the dry Balearics may reflect the higher proportion of wintering birds and greater habitat suitability in the former site (but also, see below). On the other hand, the fact that birds from the wet Balearics also have higher average body mass and are in better physical condition than in Catalonia could be explained by the need for birds trapped on islands to build up larger energetic reserves in order to cross the Mediterranean.

The mean body mass in birds crossing the C Mediterranean (mean 14.5, n = 2,390; Spina et al., 1993) is similar to that observed on Els Columbrets, but lower than in the Balearics. Birds from N Morocco show similar values to those captured in N Tunisia during spring migration (mean 17.1, n = 19; Waldenström et al., 2004), indicating that overall mean body mass in N Africa is similar to that recorded in S Iberian Peninsula (mean 16.5 in Gibraltar [n = 28; Finlayson, 1981] and 17.3 on L'Illa Grossa [n = 52]), but higher than in Catalonia and on the Balearics. Robins, thus, seem to build up the greatest amounts of energetic reserves in S Spain and coastal NW Africa before moving northwards.

Stopover

The percentage of retraps is highest in Catalonia and the wet Balearics, although the mean stopover length is similar in all areas (too little data from Morocco to be relevant; fig. 5). In all areas with available data, fuel deposition rates tend to be significantly negative (table 2) and birds staying for a few days show significantly lower initial body mass than those not retrapped (fig. 5). These results suggest that these areas do not offer good refuelling opportunities for migrating robins and do not support differences in habitat suitability between wet and dry Balearics. The higher proportion of retraps in Catalonia and the wet Balearics may respond to higher proportions of wintering birds in these areas, although the observed negative refuelling rates may reflect their inability to build up energetic reserves prior to migration.

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

	n	Wing	Third primary	Body mass	Fat score
Catalonia	1,894	72.4 ± 1.9 (67.0-79.0)	54.5 ± 1.6 (49.5-60.0)	15.9 ± 1.6 (10.5-23.6)	2.3 ± 1.1 (0-6)
Columbrets	446	72.4 ± 2.1 (65.0-78.5)	54.3 ± 1.8 (49.4-60.5)	14.7 ± 1.8 (10.5-20.7)	1.1 ± 1.1 (0-4)
Balearics (dry)	5,966	71.7 ± 1.9 (63.0-79.5)	54.0 ± 1.7 (46.0-61.0)	15.4 ± 1.7 (9.9-24.1)	2.1 ± 1.1 (0-6)
Balearics (wet)	103	71.9 ± 1.8 (68.5-75.5)	54.1 ± 1.4 (51.5-57.5)	16.6 ± 1.7 (13.0-23.7)	2.1 ± 0.9 (0-5)
Chafarinas	0				
N Morocco	8	69.8 ± 1.6 (67.5-72.0)	52.6 ± 1.6 (51.0-55.0)	17.6 ± 0.8 (16.7-18.9)	3.6 ± 0.7 (3-5)
S Morocco	2	71.0 ± 2.8 (69.0-73.0)	52.5 ± 2.1 (51.0-54.0)	15.9 ± 1.2 (15.0-16.7)	2.5 ± 0.7 (2-3)

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	-0.12 ± 0.06 (332)	-0.22 ± 0.18 (30)	-0.25 ± 0.04 (738)	0.01 ± 0.16 (22)		
Retraps >1 day	-0.01 ± 0.04 (242)	-0.11 ± 0.16 (23)	-0.10 ± 0.03 (527)	0.04 ± 0.09 (17)		

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

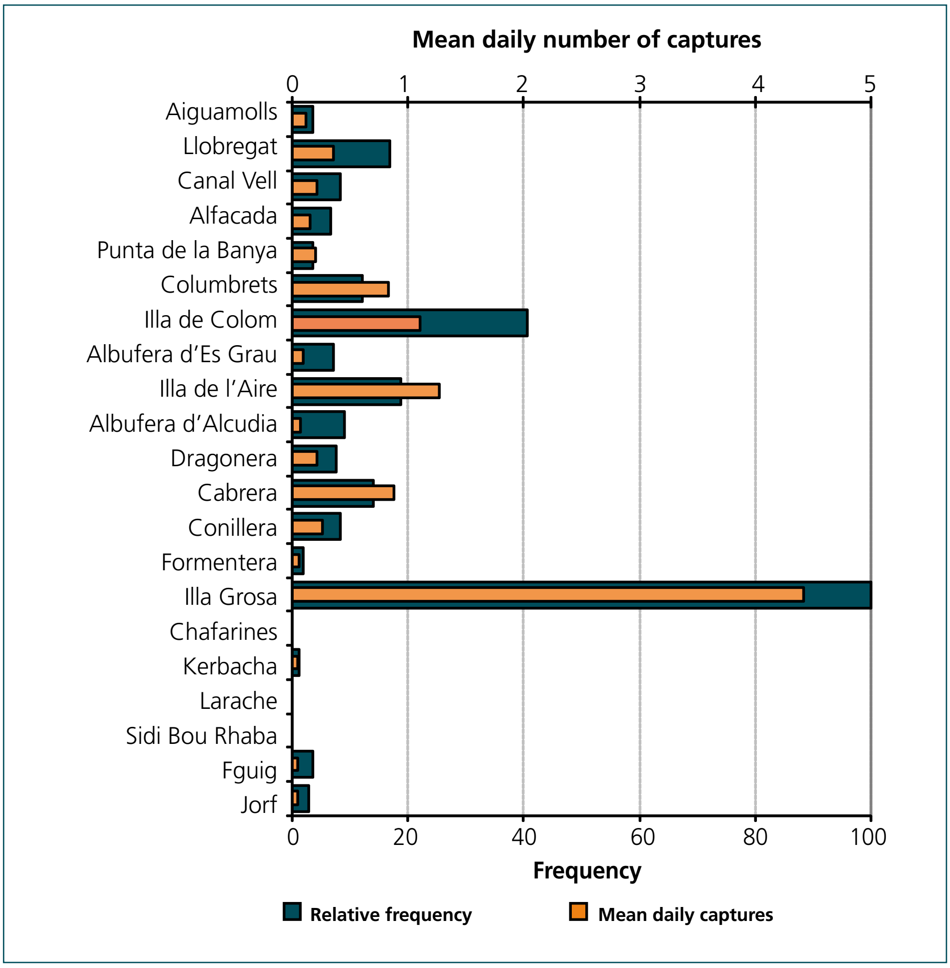


Figure 2. Relative frequency of captures and mean daily numbers according to site during the standard period (16 April to 15 May).

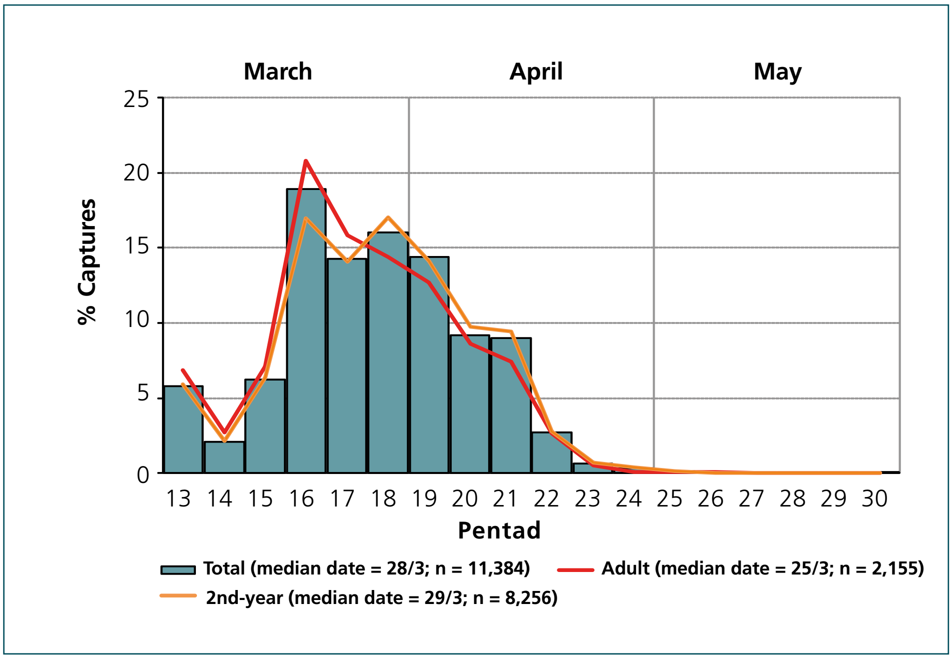


Figure 3. Frequency of captures during the study period.

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

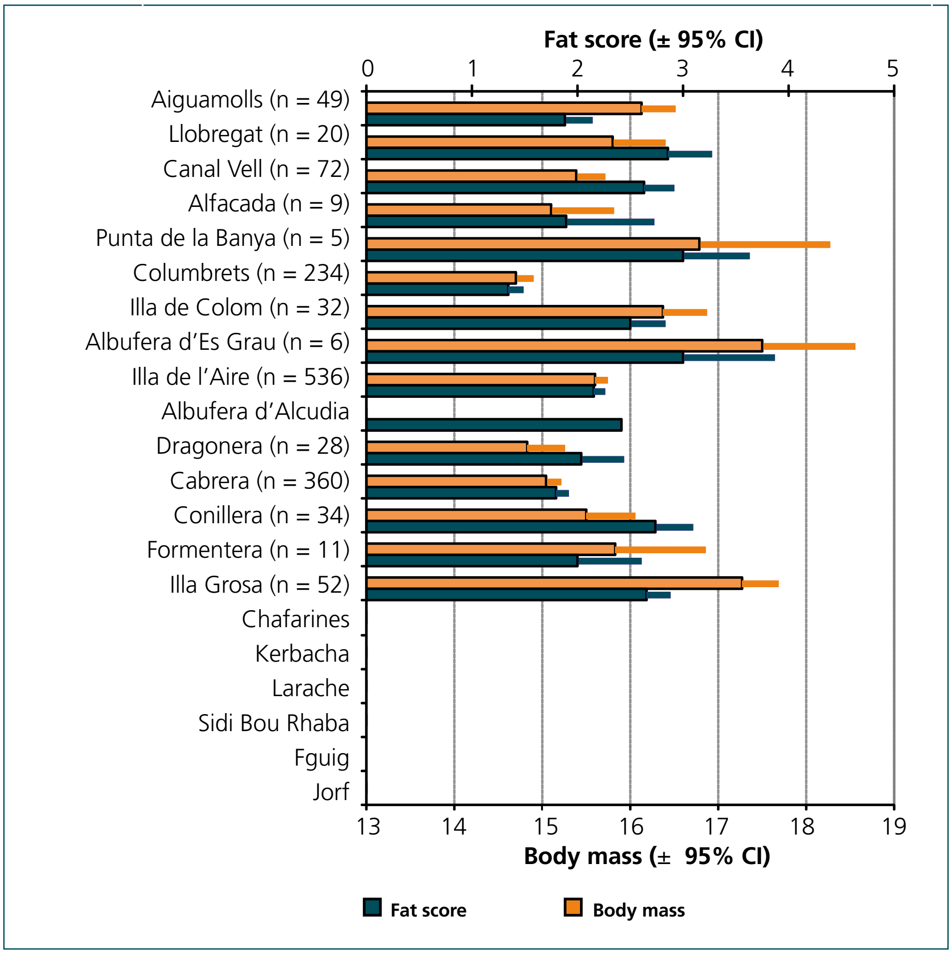
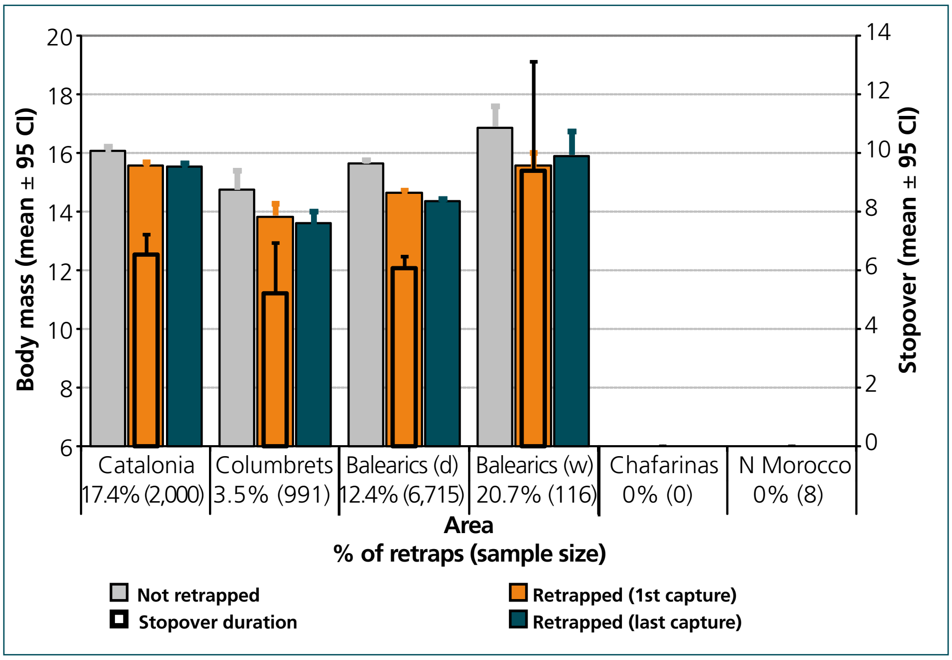


Figure 5. Variation in body mass by trapping status, minimum stopover length and frequency of retraps according to area.



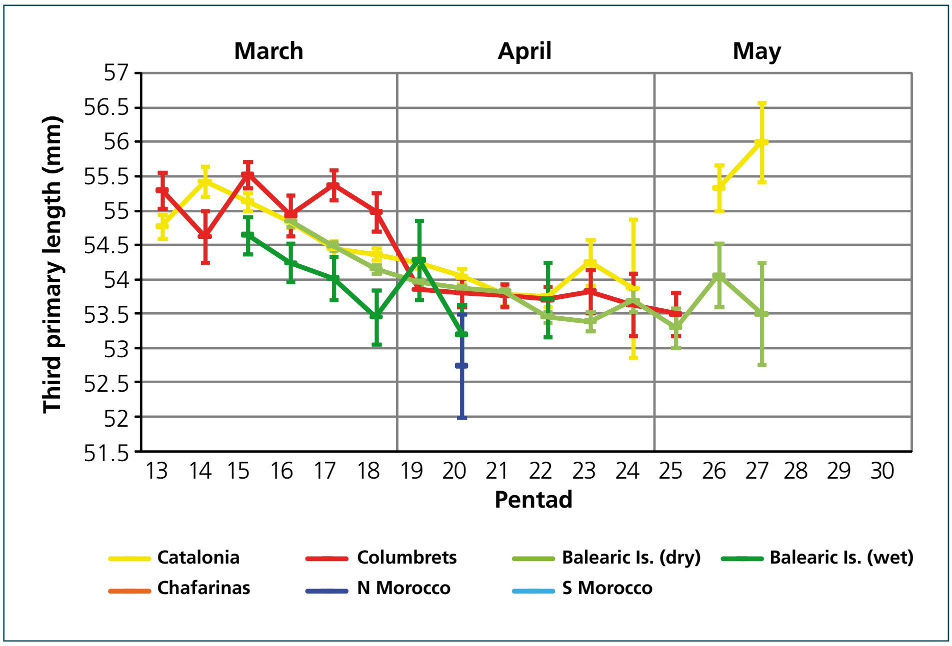


Figure 6. Temporal variation of third primary length according to area.

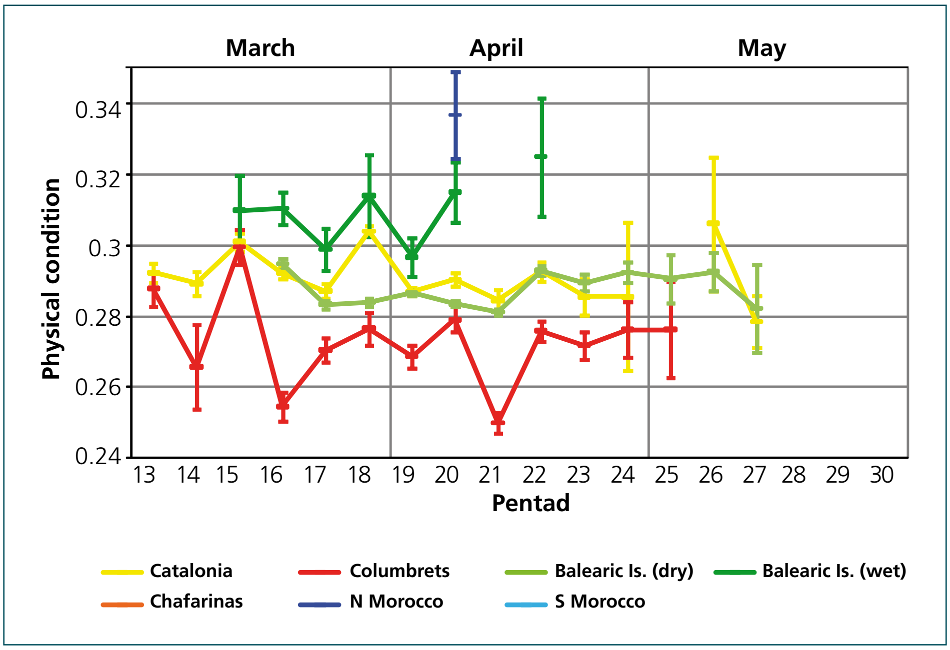


Figure 7. Temporal variation of physical condition according to area.

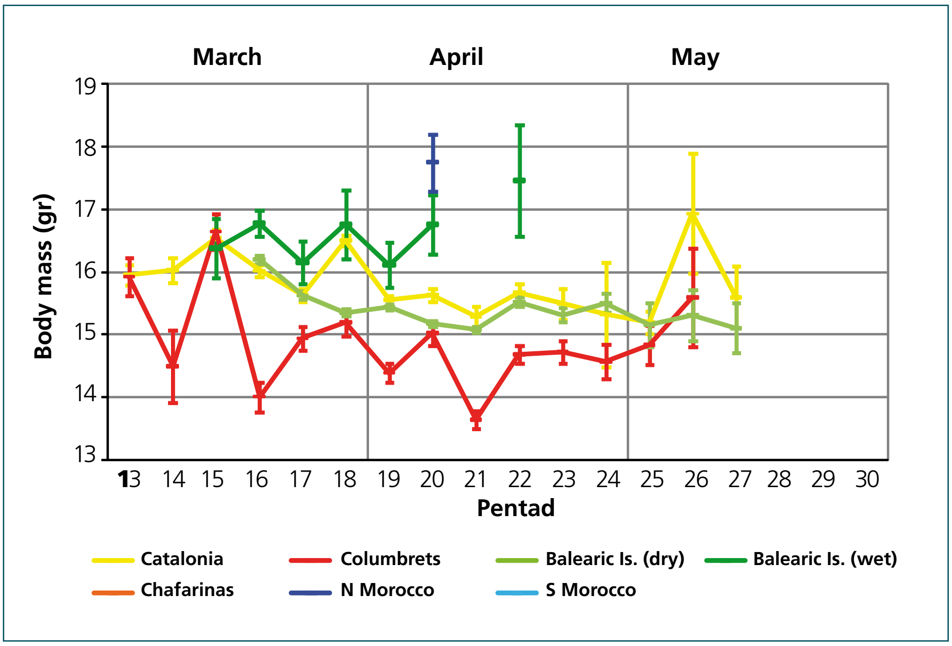


Figure 8. Temporal variation in body mass according to area.

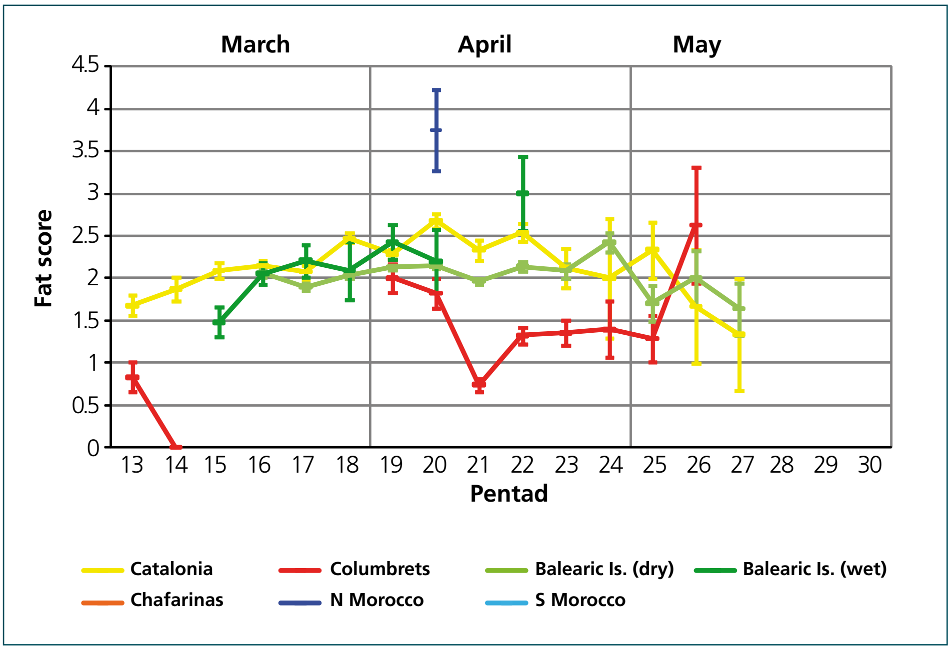


Figure 9. Temporal variation in fat score according to area.