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Short communications - *Brevi note*

An unusual nest location in House Martin *Delichon urbicum*: A case of compensation behaviour?

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House Martins *Delichon urbicum* use pure mud to construct a characteristic hanging nest (McNeil & Clark 1977, 1983, Snow & Perrins 1998). The building of a 'covered mud cup' can be seen as a key innovation allowing this species to occupy habitats lacking of available nest substrates or cavities (Winkler & Sheldon 1993, Hansell 2000). In synanthropic conditions, these nests need of specific supports to provide greater adhesion with the substrate: therefore they tend to be very associated to buildings with specific architectural ornamentations (under balconies, eaves, corners of window frames; Chudinova & Brtek 1982, Menzel 1984, Benedetto *et al.* 2001, Plaszyk 2001, Murgui 2002) with wood or brick as support, so providing strong adhesion of nests to substrates (Wotton *et al.* 2002).

In April 2016, we observed a colony of House Martin (n = 134 nests) breeding in the Flaminia petrol service station (both of the carriageways: East: 66 nests; West: 68) located along a high-traffic highway (A1) in the Tiber flood valley (Magliano Sabina, central Italy; UTM 293392E, 4688020 N; 78 m a.s.l.). Nests were located under two platform roofs (1200 m^2 each one; 5.58 nest/100m^2) having as support only a metallic platform and a 30-cm heigh metal bar supporting videocameras directly above the petrol refuelling pumps (height from the ground: 4.50 m). In each cluster of videocameras, nests were grouped (n. of nests/cluster: 2.79 ± 0.82; n = 48), with a large fusion of nest walls (up to 5 together). Any type of brickwork or wooded substrates was absent (Fig. 1).

Both the support and location of the nests appear to be different from the normal type of nests and until now it has never been reported in literature. Ptaszyk (2001) from a large sample (n > 6500 nests), reported nests located on corner of window frames, under balconies, eaves, arcades, and loggias. Murgui (2002) reported six types (façade projection, eaves, balcony frames and ledges, window frames and ledges; n > 1000 nests) but never on metallic supports (see also Bell 1983, Anton & Santos 1985).

Location of nest placement by House Martins depends by many different factors and constraints (Tatner 1978, Turner 1982, McNeil & Clark 1983, Murgui 2002, Wotton *et al.* 2002, Arena *et al.* 2011): more particularly, a suitable site should (i) be located in proximity to food and mud sources, also ephemeral, (ii) have scarce accessibility to predators, (iii) ensures shelter against rain, (iv) ensures a strong adhesion of nests to substrates. In our case, although the first three points seem apparently satisfied (proximity to Tiber mud banks; high availability of prey for nestlings; scarce accessibility to predators; shelter against rain due to platform roofs), we observed as (point iv) nests are joined together due to the scarce adhesion to substrate provided from the metallic supports.

We hypothesize that this nesting behaviour represents a case of compensatory advantage (Murgui 2002). House Martins select nest sites to minimize the energy cost invested in nest building and being sensitive to the foraging site distance when feeding nestlings (Bryant & Turner 1982). Therefore, poor structural suitability of nest sites (metallic supports without ornamentations) might be compensated by the high availability of prey and mud resources due to (i) the proximity to the Tiber's banks (270 m) and, (ii) the presence of surrounding croplands, pastures and, locally, of toilette tanks (many individuals flying over it). These resource availability might have induced the local population of House Martins to initiate a breeding colony in this site notwithstanding the only available building

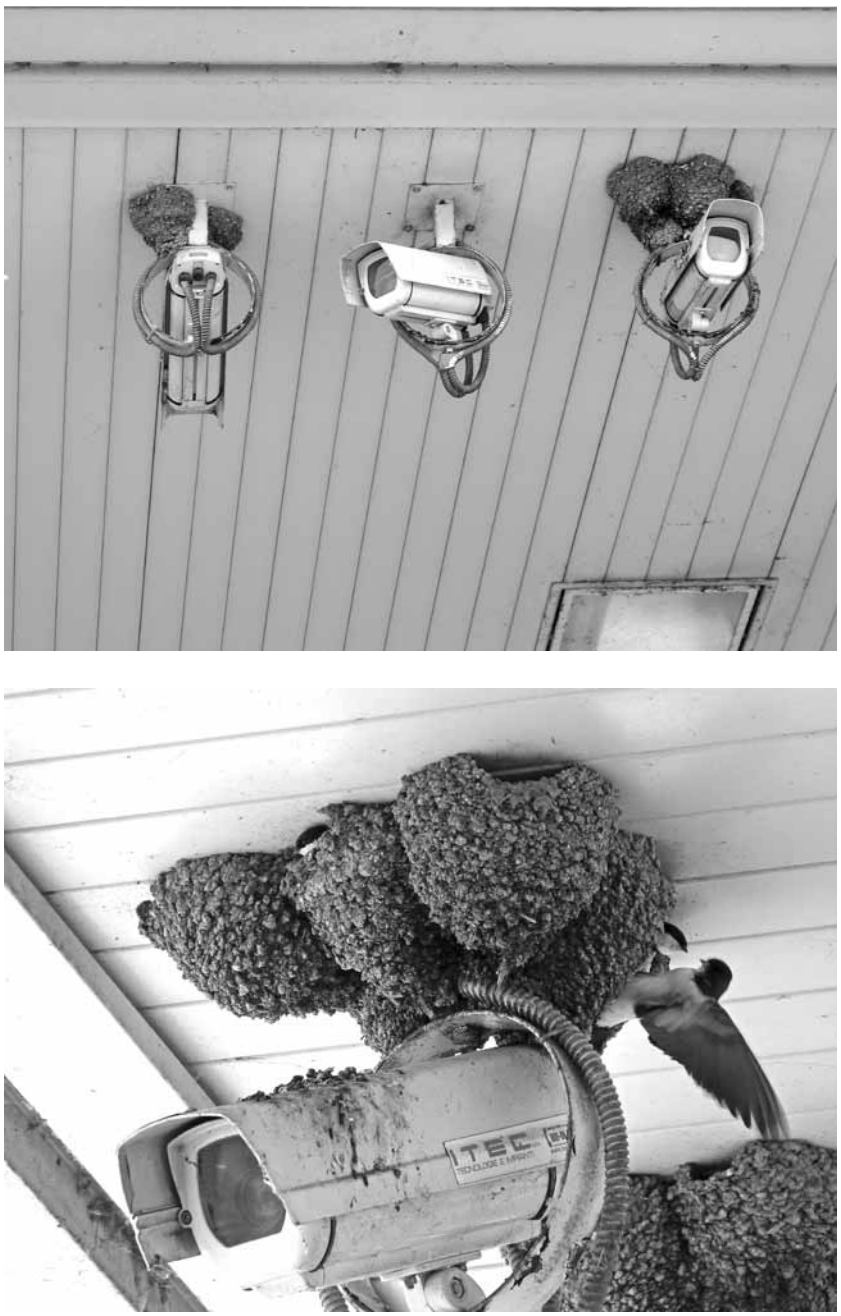

Figure 1. (a): House martin nests on unusual location and support (videocamera cluster). (b): particular of a nest group (Photo by V. Ferri).

does not have suitable modern architecture (petrol station has been built in 2008; the nearest suitable historical town is 5 km away). Moreover, to compensate for poorer adhesion provided by the metallic substrates, the number of nest walls touching other nests was increased. A first consequence of the fusion of nest walls is the increase of the size of nest groups when compared to ordinary substrates (Murgui 2002). Finally, the height of the nests in the petrol station was much lower when compared to other studies (mainly >5 m; Bell 1983, Indykiewicz *et al.* 2001) suggests that the individuals do not consider the continuous and relatively constant presence of people and transit by

motor-vehicles as a threat, as has been observed in other extreme contexts (see Giacoia 2000).

Although probably rare (e.g. we sampled no one House Martin colony in the other 13 petrol stations along A1 Highway from Rome North to Bologna; 535 km), we suppose that this unusual nesting behaviour might develop when analogous circumstances occur (further cases have been observed along some of the highways in Sicily; B. Massa pers. comm.). The interpretation of our data allow us to postulate an *a-posteriori* hypothesis (inductive approach; see Romesburg 1981, Guthery 2007) that should be tested in further research.

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