

New breeding sites of Yellow-legged Gull around the Maltese Islands

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The Yellow-legged Gull *Larus michahellis* (Naumann, 1840) has been recorded as a breeding species in Malta since 1843 (Schembri 1843), breeding exclusively at mainland sites before colonising Filfla in the 1930s (Sultana & Gauci 1970). The largest colony, approximately 202±24 apparently occupied nests (5-year mean, apparently occupied nest defined as well-constructed nests capable of holding at least one egg), is now located on Filfla (BirdLife Malta unpublished data 2013-2018). Sultana *et al.* (2011) describe three smaller colonies present on high cliff ledges along the west coasts of Malta and Gozo, namely Dingli, Ta' Ċenċ and Wardija. There are indications that these mainland sites underwent a decline during the 1990s (Borg & Cachia Zammit 1998). However, recent data show that colonies at Ta' Ċenċ, Dingli and Wardija may have expanded. The monitoring of these established colonies on Gozo and Malta is beyond the scope of this short note.

Comino

On 1 May 2014, one nest containing a single egg was discovered on the south face of the island. The site was visited twice whilst at egg stage with an adult observed incubating the egg on 4 May 2014 (Figure 1). However, no further visits were undertaken and the nest was assumed to be unsuccessful.

One nest was located on 21 April 2017 on the east cliffs of Comino, with four eggs (Figure 2). This contrasts to the normal clutch size found on Filfla (two to three eggs) and, to the best of our knowledge, is the first record of a nest containing more than three eggs in the Maltese Islands. The adults were attending the nest on at least one more date after discovery but successful hatching was not confirmed.

One unattended nest with a single egg and an adult in incubation posture were recorded on the east cliffs on 6 June 2018. The nest contents for the latter were not visible but the adult gull soon started mobbing the observers suggesting the presence of an active nest.

Two nests were recorded on 9 May on the cliffs of the southeast corner of Comino. Both of these nests contained two eggs. It is likely that there were more nests not visible from the cliff top as around 20 adult gulls were in the area behaving aggressively. No subsequent visit was made to assess whether the two visible nests were successful.

These records give credence to the claim by Bannerman and Vella-Gaffeiro (1976) that Yellow-legged Gulls may once have bred on Comino. However, no confirmed breeding attempts were recorded in the decades following their report (Sultana *et al.* 2011).

Gharb

A small colony was discovered on high cliff ledges at Gharb on 19 June 2018. A single chick was observed on the first visit and was heard begging for food from adult gulls close by. The site was revisited on 21 June. On both visits to the colony ten adult gulls were observed in the area, suggesting that the colony held a maximum of five pairs. Although only a single juvenile was observed on either visit, considering the date of the colony discovery, it is possible that other young had already fledged and left the colony.

St Paul's Island

The Yellow-legged Gull was confirmed as a new breeding species for St Paul's Island on 14 May 2018 (Figure 3). The first nest containing a single egg was found on the north side of the larger islet during fieldwork by the LIFE Arċipelagu Garnija Project team. The nest appeared abandoned and the egg was cold. Subsequent visits to the island recorded a further five nests, an unfinished nest on the south side of the larger islet and four nests - two with single eggs and two with no eggs - near the centre of the smaller islet. Although no chicks were found, one broken egg with a well-developed chick inside was noted. Eggshell fragments were found in the remains of some nests. From their appearance, it is most likely that eggs from these nests were predated by other gulls on the island.

Inspection of the site in 2019 revealed that Yellow-legged Gulls were breeding on the island once again. Seven apparently occupied nests were recorded on 22 May and their position marked with GPS. Two of these nests contained eggs. The first of these two nests had apparently failed at hatching as two well developed chicks were found inside half-hatched eggs. The second nest contained a successfully hatched chick as well as a second egg.

A second visit to the emerging colony was made on 6 June. All seven nests were re-inspected but no additional eggs were found and all nests were empty. However, two large chicks were found close to the nest that had contained the successfully hatched chick and egg (Figure 4). Both chicks still retained some down but many of their juvenile flight feathers had grown in with the larger of the two displaying almost full-length primary feathers. The two chicks were seen again on a subsequent visit on 19 June, both flying with adults.

Another fledgling was found on the larger islet on 19 June, close to where adult gulls had been observed showing defensive behaviour in previous months. Although the nest was not found, it can be safely assumed that this chick had hatched on the larger islet and had not moved from the smaller islet.

All three chicks were fitted with a BirdLife Malta metal ring, each bearing a unique code, on the left tarsus.

Other sites in Malta and Gozo

Newly discovered small colonies were identified on mainland cliffs in 2017 during monitoring of shearwater spp. colonies and 2018 as part of a nationwide census of breeding birds. Due to the difficulties in accessing and observation of these cliff areas, the presence of breeding Yellow-legged Gulls in these locations was inferred from adults in incubation posture, defensive behaviour and presence of young. Locations include (minimum number of breeding pairs); Mtaħleb, Malta (5 pairs); Fawwara, Malta (10 pairs); and Xlendi/Sanap Gozo (2 pairs).

Factors affecting colonisation

The global Yellow-legged Gull population is increasing (BirdLife International 2018). This is due to a number of factors but principally among them the increased abundance of accessible anthropogenic food sources across their breeding range. The presence of newly established colonies on the small islets of the Maltese archipelago and expanding mainland colonies indicate an increasing national breeding population. Whether the observed changes in the Maltese population is a result of local recruitment, or from the Mediterranean meta-population or both remains unknown. A colour ringing programme could be established to investigate the nature of recruitment occurring. Further studies can be conducted on Filfla to assess whether this islet has reached maximum colony capacity which would favour range expansion to other sites in the Maltese Islands.

The Yellow-legged Gulls of St Paul's Island and Comino may be benefitting from aquaculture close to both of these islands. The fish farms provide an easy source of food. Numerous Yellow-legged Gulls were observed feeding on discards from the fish farms close to St Paul's Island in 2018 (pers. obs.). Moreover, several regurgitates containing plastic and glass were found, indicating that the gulls might be scavenging at the Maghtab landfill. Increased availability of anthropogenic food sources has been shown to exert a strong positive influence on nearby Yellow-legged Gull populations (Duhem *et al.* 2008). As a note of interest, a gull regurgitate containing a Mediterranean Storm-petrel *Hydrobates pelagicus melitensis* was found on the smaller islet of St Paul's Island on 1 June 2018.

Failure of nests on St Paul's Island and Comino in 2018 might be due to a number of factors. Most likely is the high levels of anthropogenic disturbance on both islands throughout the tourist season, which coincides with the nesting period of Yellow-legged Gulls. High levels of anthropogenic disturbance at gull colonies has long been known to negatively impact reproductive success (Burger 1981). It is unknown whether the gulls at the newly identified colonies are experienced breeders from pre-established colonies or first-time breeders following natal dispersal. The low reproductive success suggests they are the latter. However, other factors, such as intra-specific competition, may also be influencing the reproductive success. Like many gull species, Yellow-legged Gulls have been recorded to predate the nest contents of conspecifics (Marin *et al.* 1995). Although this behaviour is seen more often in colonies with high nest density, studies in Herring Gull *Larus argentatus* have shown that intrusion by non-breeding individuals at nest sites and the subsequent disturbance of parent birds to be a common occurrence, even at low colony density (Henzi *et al.* 1990).

The reduction of parental attendance either through human presence or intrusion of conspecifics may help to explain the low reproductive success of the St Paul's Islands and Comino nests. Despite a high density of rats recorded on both islands prior to a rat control programme implemented in 2018 (Lago *et al.*), it is unlikely that the nest contents of Yellow-legged Gulls were depredated by rats. A 2003 study (Prieto *et al.*) suggests that rats only marginally affect Yellow-legged Gull productivity for two reasons. Firstly, rats seldom predate intact gull eggs due to either physical limitations, jaw-gape vs. egg-size or bite force, or the lack of acquired predatory

skills when predated intact eggs. Secondly, gull nest contents are often protected by parents. Large Laridae gulls, including Yellow-legged Gulls, are particularly strong nest defenders and have high parental attendance. As a result, ground nesting large Laridae gulls, appear to be less susceptible to nest content predation by rats compared to smaller burrow-nesting species, such as shearwaters and petrels (Martin *et al.* 2000, Prieto *et al.* 2003, Jones *et al.* 2008). However, Latorre *et al.* (2011) report that although risk of egg depredation is diminished with increasing egg size, even large eggs experience high rates of depredation by rats when left unattended. Rats on St Paul's Island are known to depredate eggs of Yelkouan Shearwater *Puffinus yelkouan*, as such, it can be assumed that they have acquired skills necessary to predate large eggs. The combination of low-parental attendance and high rat abundance may explain the absence of breeding Yellow-legged Gull on St Paul's Island pre-2018. A further study into the interactions of rat presence at Yellow-legged Gull colonies in the Maltese Islands is needed.

Yellow-legged Gulls are frequently targeted by illegal hunters, particularly during the winter, which may have prevented expansion of existing colonies in the past and made the establishment of new colonies impossible. An abatement in hunting pressure may be a contributing factor in the observed changes in existing and newly established colony sites. However, there is no evident trend in the numbers of illegally shot specimens recovered between 2007 and 2018 (BirdLife Malta unpublished data).

The success of several nests on St Paul's Island in 2019 is certainly an historic record. There are no mentions of Yellow-legged Gulls breeding on St Paul's Island in the literature and, therefore, the three chicks ringed in 2019 are the first to have hatched on these island. However, the productivity of this colony and other establishing colonies remains low. Should these colonies persist, they may experience a period of exponential growth and high productivity as the breeding pairs capitalise on the low competition for the best nesting sites (Kildaw *et al.* 2005, Skórka *et al.* 2005). Therefore, the continued monitoring of all establishing and newly emerging colonies is important in order to evaluate the possible increase in predation risk they might pose to Yelkouan Shearwater colonies in their respective vicinities. Monitoring may be achieved through initial site visits at each colony location during the egg laying period to count apparently occupied nests and numbers of eggs with subsequent visits during the chick rearing period (2–3 per season) to assess

productivity. The establishment of new colonies in accessible sites as opposed to the steep cliffs of Malta and Gozo, also gives opportunity for dietary comparisons with the Filfla colony.

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Raymond Galea

Figure 1. Adult Yellow-legged Gull incubating a single egg. Comino 4 May 2014



Martin Austad

Figure 2. Yellow-legged Gull nest with four eggs. Comino 17 April 2018



James Cymbie

Figure 3. Yellow-legged Gull nest on main islet of St. Paul's Island 14 May 2018



James Cymbie

Figure 4. The first recorded Yellow-legged Gull chick to have hatched successfully on St Paul's Island