

Status and behaviour of Little Egrets wintering in western France

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ABSTRACT A largely sedentary population of Little Egrets *Egretta garzetta* has become established throughout the coastal regions of western and northern France. This population is still increasing, but numbers are temporarily reduced by periods of severe winter weather. Cold-weather mortality results in fewer breeding birds in the following spring, but the impact has been insufficient to stall the long-term population growth. Only those birds feeding at saltpans appear able to carry sufficient reserves to last them through cold periods. No significant movements of Little Egrets have been noted at these times, and it is suggested that displaced birds disperse widely into the surrounding area, in search of alternative feeding sites.

Wintering Little Egrets *Egretta garzetta* were first observed in western France during the winter of 1974/75, when a few individuals remained in Aquitaine, in the southwest of the country. Subsequently, a regular wintering range has extended progressively northwards along the coast, reaching Nord-Pas-de-Calais in 1995. During prolonged periods of hard weather, when coastal waters freeze, Little Egrets suffer badly. Most leave their local area and many never return; and following a cold winter, the number of nesting Little Egrets is reduced. During the last 25 years, the population in western France has increased substantially, but erratically, numbering at least 8,078 individuals during the winter 2000/01. In this paper, we review the increase in the wintering population and discuss the possible fate of those birds affected by severe winters.

The colonisation of western France

In spring, Little Egrets returning to breeding colonies may 'overshoot' and appear well to the north of their main breeding range. If conditions are suitable, and sufficient food is available, such birds may remain throughout the spring and summer, but return to regular wintering areas later in the year. When the popula-

tion is increasing, more and more of these pioneers will be found in new summering areas, together with, in due course, juveniles raised earlier in the year in established colonies, these young birds dispersing after the breeding season in August and September. The establishment of new overwintering sites occurs only when over-



Fig. 1. Map showing regions of western France.

summering has become well established, usually several years after the initial appearance at a site. Once a wintering population becomes established, breeding often takes place in the same area, typically soon after the first birds overwinter successfully. When the number of nests is small, they may be difficult to find, and early breeders may remain undiscovered until the colony increases in size.

Musgrove (2002) provided a detailed description of this pattern of events in southern England. In France, it has also been well documented in Normandy and Picardy by Debout (1998) and Sueur & Triplet (1999). In Normandy, a few Little Egrets were seen from 1968 to 1980, mostly in spring. During 1981–86, summering birds became more numerous, and were joined by dispersing juveniles in August and September. Little Egrets began to overwinter in 1990/91 and, in 1993, nine nests were discovered on one of the small islets of Saint-Marcouf, off the coast of Cotentin (Debout 1998). In Picardy, Little Egrets were first seen during the spring of 1965, but were rarely noted during the following years. From 1995 onwards, they became more numerous in spring and were also seen in August, during post-breeding dispersal. Small numbers wintered in various places during 1978–82, but the habit did not become firmly established, and there were no reports of wintering birds from 1983 to 1987. Little Egrets were seen again in winter in 1988, and have been observed each winter since. Nesting was first recorded in 1978, and one pair then nested annually until 1981, but it was not until 1988 that breeding numbers began to increase (Sueur & Triplet 1999).

The wintering population in western France

In order to establish the number of Little Egrets wintering along the coastline of western France, a series of regular and co-ordinated counts at roost sites has been initiated. Additional counts made on feeding grounds in January have been used to support the roost counts, and to establish the extent to which feeding birds disperse during the day. The total wintering population of Little Egrets along the western coast of France in January 2001 was estimated to be at least 8,078 individuals. No counts have been available from Loire-Atlantique and Bretagne since 1999, so the 1999 figures for these two regions were combined with 2001 counts from other regions to derive this estimate. The numbers wintering

in each province are summarised below:

Aquitaine

Little Egrets began to winter in Aquitaine in 1974/75. In subsequent years, numbers nearly doubled each winter and, by late November 1981, 530 individuals were counted in several roosts in the Arcachon basin, the most important wintering area in Aquitaine (Barande 1984). By January 1993, counts revealed 1,600 Little Egrets wintering in the Gironde region (Fleury 1993), which increased to 2,168 in January 2001, of which 1,906 were in the Arcachon basin and 188 at Les Landes (Fleury 2001). Numbers wintering in the Arcachon basin have fallen slightly since then, with 1,745 in December 2001, and 1,500 in January 2003.

Charente-Maritime

Wintering Little Egrets have been counted at roosts in the Île de Ré area since January 1995. Although numbers have fluctuated, the overall trend has been upward, with 821 in 1995, 600 in 1996, 651 in 1998, 582 in 1999, 728 in 2000, 743 in 2001, 458 in 2002 and 1,014 in 2003 (Lemesle *in litt.*). These totals exclude the population wintering on the Île d'Oléron, which has not been counted.

Vendée

Overwintering Little Egrets were first observed in 1979/80 (Rousseaux 1980) and, by 1988, this behaviour was well established (Gonin 1989). Numbers roosting on the island of Noirmoutier reached 974 in December 2000 and 831 in January 2001 (J.-C. Lemesle *in litt.*).

Loire-Atlantique

The first count of wintering Little Egrets was made in January 1983, by which time 403 individuals were already present (Joannis 1983), and by December 1984 numbers had increased to 1,050 (Recorbet 1985). The population generally increased from 1993 to 1999, with a decline during the cold winter of 1996/97; numbers at roost sites reached 2,052 in 1999 (table 1).

Table 1. Counts of Little Egrets *Egretta garzetta* at roosts and on foraging areas in Loire-Atlantique during winters 1993–99 (data from Pourreau 1994, 1996; Dufland 1998; Gentric 2001).

	No. in foraging areas	Roost count
1993	1,663	1,659
1994	1,649	1,379
1995	2,547	2,365
1996	2,237	2,027
1997	550	522
1998	1,594	1,471
1999	2,228	2,052

Bretagne (administrative region)

Little Egrets were first noted along the coast during winter 1987/88 (Gélinaud 1990) and, by the following winter, numbers exceeded 100 (Gélinaud 1991). This population has continued to increase, reaching 489 in 1994 and 627 in January 1999 (Maout 1998; Le Mao & Maout 1999; Maout *et al.* 2000; Ballot *et al.* 2003), although numbers declined to just 421 in January 1997, owing to the exceptionally cold winter, which also affected numbers wintering in Loire-Atlantique (Maout *et al.* 2001).

Normandy

Small numbers of Little Egrets began to winter in Normandy during 1990/91, and subsequent winters saw this population increase rapidly. Counts took place each winter during 1990–96 (Debout 1998) and 1999–2001 (F. Salmon *in litt.*) (see tables 2 and 3). Little Egrets now nest and, in spring, summer and autumn, roost on one of the Saint-Marcouf islets, off the coast of Cotentin, but it is uncertain whether any egrets occur here in winter (and thus the numbers of wintering Little Egrets in Normandy shown in tables 2 and 3 are minimum numbers). As in Bretagne and Loire-Atlantique, the harsh winter of 1996/97 reduced the wintering population, but numbers have subsequently increased.

Picardy

The only roost of the region occurs in the Marquenterre reserve, where Little Egrets have been counted since 1989 (table 4).

Nord-Pas-de-Calais

Wintering Little Egrets were first observed in January 1995, when 18 individuals were found

Table 2. Counts of Little Egrets *Egretta garzetta* at roosts in Normandy during winters from 1990 to 1996 (data from Debout 1998).

1990/91	10–20
1991/92	20–40
1992/93	50–70
1993/94	130–200
1994/95	400–500
1995/96	1,100

Table 3. Counts of Little Egrets *Egretta garzetta* at roosts in Normandy during winter 1999/00 and 2000/01, based on data supplied by F. Salmon (*in litt.*).

	December	January	February
1999/00	739	717	609
2000/01	1,003	738	590

(Godeau *et al.* 2000). From 1996 to 1999, only a few birds overwintered but, in January 2001, a small roost discovered the preceding year held 49 Little Egrets (G. Terrasse *in litt.*).

Establishment of winter roost sites and roosting behaviour

Winter roosts of Little Egrets are often located close to their feeding grounds – primarily salt-marshes behind the shoreline, drainage ditches and tidal mudflats. In some areas, wintering Little Egrets also take advantage of the extensive saline lagoons and salt pans created by the salt industry (see below). Roosts are thus typically within a few kilometres of the coast, though may be up to 80 km inland if the feeding opportunities are particularly good. So far, wintering Little Egrets have colonised only coastal areas in western France; no regular winter roosts have formed inland, probably because of the lack of salt or brackish water, which freezes less readily than fresh water.

The choice of the roost site depends not only on nearby feeding areas but also, to a large extent, on site security and lack of disturbance. In Normandy, Little Egrets roost on one of the Saint-Marcouf islands, a small uninhabited island in the open sea. At this secure site, birds roost in low vegetation near the ground. On the adjacent mainland, or on larger islands, where disturbance is more likely, they choose trees of

Table 4. Counts of Little Egrets *Egretta garzetta* in December and January at a winter roost in the Parc Ornithologique du Marquenterre, Baie de Somme, Picardy, from 1988 to 2001 (data from Sueur 1996a,b,c; Sueur 1997a,b; Sueur 1998; Sueur *et al.* 1998; Sueur & Triplet 1999; Sueur *et al.* 1999a,b,c; Sueur *et al.* 2001a,b; Sueur *et al.* 2002). The highest count for each month has been included.

	December	January
1988/89	N/A	7
1989/90	10	10
1990/91	10	10
1991/92	12	16
1992/93	41	16
1993/94	67	78
1994/95	146	135
1995/96	137	224
1996/97	164	21
1997/98	124	108
1998/99	65	135
1999/00	312	286
2000/01	514	506

5–20 m in height, and roost in the upper branches. All types of trees, both coniferous and deciduous, may be used for roosting, and the presence of water at the roost is not essential. Habitat surrounding the roosts varies considerably; some may be close to human habitation, provided there is no disturbance. Those roosts, which are occupied annually, are mostly situated either in marshes, where deep-water channels restrict accessibility, or on islands, many on private land or nature reserves, which means that human disturbance is minimised. Winter roosts may form in the same trees used for breeding (as at the Marquenterre reserve, in Picardy), but roosts are often smaller (and more numerous) than breeding colonies, and proximity to feeding areas is more important (for example, egrets on the island of Noirmoutier, in Vendée, nest on the adjacent mainland in a large heronry but form several smaller winter roost sites on the island).

As dusk approaches, Little Egrets return to their roosts either singly or in small parties.

The first returning birds do not fly directly to the roost, but usually land nearby, often in a flooded area, where they remain until the light fails, when they fly to the roost. Only the latest groups to arrive fly directly to the roost.

Feeding behaviour

Little Egrets disperse over a wide area when foraging, and feeding groups are formed only when a large concentration of prey is discovered, which seldom happens in winter. This behaviour distinguishes Little Egrets from Cattle Egrets *Bubulcus ibis* and feral Sacred Ibises *Threskiornis aethiopicus*, which tend to form groups when feeding, and sometimes use the same foraging grounds in France. There is no evidence to suggest that Little Egrets fish at night, and all appear to return to the roost in the evening. This is an important factor deter-



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291. Overwintering by Little Egrets *Egretta garzetta* was first observed in western France in 1974/75; breeding was recorded soon after, but it was not until the late 1980s that breeding numbers began to increase.

mining winter survival, when the time available for feeding is greatly reduced.

Our observations show that Little Egrets specialise in catching prey exclusively in shallow water, from a few millimetres up to about 50 cm deep, and we have not recorded them taking food items on land, as Cattle Egrets and Sacred Ibises do frequently. Typically, Little Egrets walk slowly in the water, often ‘foot-stirring’ and striking at prey items which dart away from the disturbance; hence they are more specialised feeders than the two other species mentioned.

Salt pans

Winter feeding areas which include salt pans, such as the Île de Noirmoutier, are highly favoured by Little Egrets. Salt pans are shallow, man-made lakes where food is concentrated and abundant, and the birds obtain shelter from

cold winter winds. Little Egrets feeding on salt-pans often rest and preen quietly, having already fed sufficiently well, just two hours after sunrise. They catch mostly worms (Annelida) and shrimps *Palaemonetes varians*, which are abundant and not harvested by fishermen. One Little Egret, killed by a car, had 171 shrimps in its stomach (M. Vaslin pers. comm.). In the winter, seawater does not enter the salt-pans, which are fed by seepage and rainwater. At times, they may dry out, which leads to prey becoming concentrated in the remaining pools of deeper water, and this often triggers a concentration of feeding egrets (Voisin 1978, 1991). Although Little Egrets will feed in sea pools at low tide and at oyster beds, these are relatively unimportant sources of food; we carried out winter transect counts of egrets feeding on salt-pans, and no variation in numbers with tide was found. In spring, the external basins of the salt-pans are filled with seawater. As temperatures increase, the sluices are closed and the salt concentration in the water increases. Little Egrets will continue to use salt-pans provided

the salinity of the water does not increase to a level where fish and shrimps cannot survive.

Other feeding sites

In areas where salt-pans are not available, Little Egrets feed on intertidal mudflats uncovered by the falling tide in estuaries, and also in small seawater pools left at low tide, or along the tide-line when the tide floods. They also frequent oyster beds at low tide, but during the coldest months, most are found in more protected coastal areas such as saltmarshes and drainage channels. Small numbers also feed inland, on freshwater marshes and small lakes (Godin 2002) and some may even frequent flooded gravel-pits, inundated grassland and water-treatment facilities. Sueur & Triplet (1999) found that during the winter months the most commonly taken prey items were grey mullet *Liza* sp., Brown Shrimps *Crangon crangon*, European Green Crabs *Carcinus maenas*, a variety of water insects and leeches (Hirudinea).



Rebecca Nason

292. Little Egrets *Egretta garzetta* desert wintering sites in northern and western France during spells of cold weather and it is thought that they move short distances inland in search of unfrozen rivers and streams.

Once conditions improve, birds quickly return to coastal sites, but numbers are much reduced after prolonged periods of sub-zero temperatures and it seems likely that many die during such conditions.

The effect of cold weather on wintering populations

Consecutive days of sub-zero temperatures occur with sufficient frequency, even along the coast, to affect wintering Little Egret populations. The first observations of the effects of severe weather on wintering Little Egrets in France are those of Recorbert (1985). During winter 1984/85, when temperatures fell below freezing over an 18-day period (minimum temperature -13°C , at Nantes in January 1985), counts were made at two Little Egret roosts, before and after the cold spell. The roost at La Turballe, on the Guérande peninsula, Loire-Atlantique, held 575 Little Egrets on 29th December 1984, but only 50 on 18th January 1985, after the end of the cold spell. Although exact numbers were not established, Little Egrets feeding at the nearby salt pans were known to have remained in the area as no fewer than 67 dead egrets were found under the roost trees. The roost at Moutier, in the Bourgneuf Bay, Charente-Maritime, held 412 Little Egrets on 30th December 1984, but all had disappeared on 19th January 1985. By the end of February 1985, 50% of the December population had returned to La Turballe but a comparable figure of only 1% was present at Moutier.

Maillard & Rabouin (2001) documented the impact of another period of freezing temperatures on wintering Little Egrets in Loire-Atlantique. From late December 1996 to about 10th January 1997, the minimum temperature fell to -10°C . This had a devastating effect on Little Egrets throughout the region, with numbers counted at roost falling from 2,319 to 522 and many birds found dead. The effect of this cold spell was also observed at the Marquenterre roost, in Picardy. On 13th December 1996, 164 Little Egrets were counted here, and 116 were still present on 25th December. The first casualties were noted on 31st December, when four birds were found dead; by 4th January 1997, only 21 birds were roosting, and all had disappeared by 12th January. When temperatures returned to normal, only 25 birds had reappeared by 18th February (Carruette 1997, 1998).

We studied the effect of cold weather in December 2001 on Little Egrets in the Parc ornithologique du Teich, in the Arcachon basin, in great detail. During the second half of the month, temperatures fell below freezing on 12 days between 14th and 25th December, with a

minimum of -8°C recorded. During this period, all water was frozen from 16th December, with the exception of a few holes created and maintained by the presence of ducks (Anatidae), Great Cormorants *Phalacrocorax carbo* and Common Coots *Fulica atra*. Roosting Little Egrets numbered 610 before the onset of the cold spell, but most left the area when the water froze, although a small number remained and fed where the water was still open (ten remained on 16th and six on 26th). On 28th December, at the start of the thaw, 40 Little Egrets were already back at the roost, and numbers increased to 80 on 6th January 2002 and to 342 by mid January. Only four were found dead. This was mirrored throughout the entire Arcachon basin, which held 1,745 roosting Little Egrets in mid December 2001, but only 684 in mid January 2002. Here, as in the Camargue, on the Mediterranean coast of France (Hafner *et al.* 1994), fewer breeding birds were found the following spring: 780 pairs bred in the Arachon basin in 2001 but only 380 in 2002, which suggests that breeding birds are largely sedentary.

Cold weather during the following winter (2002/03) was less prolonged and less intense, lasting from 5th to 15th January 2003, when temperatures fell to a minimum of -7°C . In the Teich reserve, the water froze, except for a few holes, after 7th January and even water remaining on the mudflats at low tide in the Arcachon basin froze over for three days. The total number of Little Egrets in the area in mid December was 1,020, but only 794 were counted at the end of January. In spring 2003, 583 breeding pairs were counted, showing that this shorter cold spell had not prevented a slow increase of the population.

The impact of cold weather in January 1993 was also monitored at the roost in the Müllembourg reserve, on the island of Noirmoutier (D. Desmot pers. comm.). All the basins and salt pans which held suitable prey for Little Egrets froze; even seawater froze at low tide. Nevertheless, most Little Egrets remained at the site, and spent much of the day at the roost, where they could sit in the sun and shelter from the wind, minimising energy losses by roosting for much of the day. In late November, the roost numbered 425 Little Egrets, falling slightly to 399 on 9th January during the cold spell, and then increasing to 493 in early February, when temperatures had returned to normal. Only two

Little Egrets were found dead, and both were in an emaciated condition. At this site, Little Egrets feed mostly in salt pans, where food is abundant, and the birds are well fed throughout the winter. It seems that they remained in the area throughout the cold spell, being able to survive on their fat reserves. This strategy is only possible when freezing temperatures do not last too long, but suggests that Little Egrets feeding in salt pans have a greater chance of surviving a brief cold snap than those in less rich habitats. Birds in the latter tend to abandon the area in severe weather, as described in Moutier in 1985, in Marquenterre in 1997 and in the Arcachon basin in 2001 and 2002 (see above). It seems likely that many Little Egrets succumb while dispersing in search of alternative, unfrozen, feeding areas.

During periods of cold weather, when Little Egrets desert the northern wintering sites, there has been no corresponding increase at coastal sites to the south (AF pers. obs.). It seems unlikely that these Little Egrets affected by the cold disperse over great distances, and most would lack the necessary fat reserves needed for such journeys. Furthermore, any large-scale movements towards southern Europe and

Africa would surely be noted at coastal sites in southwestern France. In addition, many Little Egrets reappear at their regular roosts as soon as the cold spell is over. It seems likely that most simply fly inland in search of unfrozen rivers and streams.

In conclusion, the establishment of a sedentary population of Little Egrets in the northernmost coastal areas of western France shows that mortality during severe winter weather is not sufficient to prevent their population increasing. The protection of Little Egrets since 1962 in France (Voisin 1995) has made possible the colonisation (or perhaps recolonisation?) of this part of Europe.

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293. For a comprehensive account of the non-breeding status of the Little Egret *Egretta garzetta* in Britain, see the paper by Andy Musgrove in *British Birds* (Vol. 95: 62–80).

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