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## **Non-native bird species and the British List<sup>†</sup>**

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### **Introduction**

The British Ornithologists' Union's Records Committee (BOURC) maintains the British List – the official list of birds recorded in Great Britain. In its maintenance of the List, the BOURC is responsible for assigning species to categories to indicate their status, including non-native species which have naturalized in Britain. In 1995, the British Ornithologists' Union (BOU) and the Joint Nature Conservation Committee (JNCC) held a conference on naturalized and introduced birds in Britain (Holmes & Simons 1996). This led to a review of the process of establishment of such species and the terms that best describe their status (Holmes & Stroud 1995) as well as a major review of the categorization of species on the British List (Holmes *et al.* 1998). The BOURC continues to review the occurrence and establishment of birds of captive origin in Britain and a further major review was conducted in 2005 (Dudley 2005).

### **Aims and methods**

This paper aims to provide an up-to-date overview of the numbers and status of several key non-native species considered likely to become established in Britain in the near future, based on current information. The 2005 review focused on species reported to the Rare Breeding Birds Panel (RBBP). This paper has been expanded to include Sacred Ibis *Threskiornis aethiopicus*, which is already established as a naturalized non-native on the near continent.

The paper builds on the 2005 review and reports of the RBBP, using information garnered from a further literature search and data from the Wetland Bird Survey (WeBS).

### **Species categorisation and categories**

Since 1971, each species admitted to the British List has been placed in one or more categories to denote its status on the List (BOU 1971; Table 1). Three categories make up the main part of the British List and record those species which have occurred naturally and those non-native species which have naturalized and now have self-sustaining populations in Britain. These categories are:

- A** Species that have been recorded in an apparently natural state at least once since 1 January 1950;
- B** Species that were recorded in an apparently natural state at least once between 1 January 1800 and 31 December 1949, but have not been recorded subsequently;
- C** Species that, although introduced, now derive from the resulting self-sustaining populations (Table 2):
  - C1 *Naturalized introduced species* – species that have occurred only as a result of introduction, e.g. Egyptian Goose *Alopochen aegyptiacus*;
  - C2 *Naturalized established species* – species with established populations resulting from introduction by Man, but which also occur in an apparently natural state, e.g. Greylag Goose *Anser anser*;

- C3 *Naturalized re-established species* – species with populations successfully re-established by Man in areas of former occurrence, e.g. Red Kite *Milvus milvus*;
- C4 *Naturalized feral species* – domesticated species with populations established in the wild, e.g. Rock Pigeon (Dove)/Feral Pigeon *Columba livia*;
- C5 *Vagrant naturalized species* – species from established naturalized populations abroad, e.g. possibly some Ruddy Shelduck *Tadorna ferruginea* occurring in Britain. There are currently no species in category C5;
- C6 *Former naturalized species* – species formerly placed in C1 whose naturalized population is either no longer self-sustaining or are considered extinct, e.g. Lady Amherst’s Pheasant *Chrysolophus amherstiae*.

These categories, or variances upon them, have been widely adopted by records committees in Europe and around the world.

In addition to the three main categories, the Committee maintains three additional categories for species of questionable occurrence, species known to be of captive origin (including human-assisted species carried to Britain on board ships) and records prior to 1800 (including the fossil record):

- D** Species that would otherwise appear in Category A except that there is reasonable doubt that they have ever occurred in a natural state. Species placed in Category D only form no part of the British List, and are not included in the species totals;
- E** Species that have been recorded as introductions, human-assisted transportees or escapees from captivity, and whose breeding populations (if any) are thought not to be self-sustaining. Species in Category E that have bred in the wild in Britain are designated as E\*. Category E species form no part of the British List (unless already included within Categories A, B or C);
- F** Species that that have been recorded between 700 000 BP (before present) and 1800.

Categories D, E and F do not form part of the British List.

**Table 1.** Numbers of species in each category of the British List (as of 31 October 2008)

<i>Category</i>	<i>Number of species</i>
A	561
B	9
C	10
British List total	580
D	17
E	307
F	*

\* Species for this category are currently being reviewed.

Species can be placed in more than one category; for example, Barnacle Goose is in categories A (on account of the wintering population that occurs in Britain), C2 (due to the established naturalized population in eastern England) and E (known escapes from captivity) (Dudley 2005). Further, species qualifying for Category C can be placed in more than one sub-category; for example, Greylag Goose is placed in both C2 (birds forming established naturalized populations) and C4 (feral birds deriving from a domesticated source make up a significant proportion of these naturalized populations).

**Table 2.** Species in Category C of the British List (as of 31 October 2008). Non-native species highlighted in bold type.

Species	Categories	Year added/ Amended
Mute Swan <i>Cygnus olor</i>	AC2E	1971
Greylag Goose <i>Anser anser</i>	AC2C4E*	1971, 2005
<b>Greater Canada Goose</b> <i>Branta canadensis</i>	<b>C1E*</b>	<b>pre-1952</b>
Barnacle Goose <i>Branta leucopsis</i>	AC2E*	2005
<b>Egyptian Goose</b> <i>Alopochen aegyptiacus</i>	<b>C1E*</b>	<b>1971</b>
<b>Mandarin Duck</b> <i>Aix galericulata</i>	<b>C1E*</b>	<b>1971</b>
Gadwall <i>Anas strepera</i>	AC2	1993
Mallard <i>Anas platyrhynchos</i>	AC2C4E*	1993, 2005
Red-crested Pochard <i>Netta rufina</i>	AC2E*	2005
<b>Ruddy Duck</b> <i>Oxyura jamaicensis</i>	<b>C1E*</b>	<b>1971</b>
Western Capercaillie <i>Tetrao urogallus</i>	BC3	pre-1952
<b>Red-legged Partridge</b> <i>Alectoris rufa</i>	<b>C1E*</b>	<b>pre-1952</b>
Grey Partridge <i>Perdix perdix</i>	AC2E	1993
<b>Common Pheasant</b> <i>Phasianus colchicus</i>	<b>C1E*</b>	<b>pre-1952</b>
<b>Golden Pheasant</b> <i>Chrysolophus pictus</i>	<b>C1E*</b>	<b>1971</b>
<b>Lady Amherst's Pheasant</b> <i>Chrysolophus amherstiae</i>	<b>C6E*</b>	<b>1971, 2005</b>
Red Kite <i>Milvus milvus</i>	AC3	2005
White-tailed Eagle <i>Haliaeetus albicilla</i>	AC3E	2004
Northern Goshawk <i>Accipiter gentilis</i>	AC3E*	1993
Rock Dove/Feral Pigeon <i>Columbia livia</i>	AC4E*	1993
<b>Rose-ringed Parakeet</b> <i>Psittacula krameri</i>	<b>C1E*</b>	<b>1984</b>
<b>Little Owl</b> <i>Athene noctua</i>	<b>C1</b>	<b>pre-1952</b>

## 2005 Category C review

The 2005 review (Dudley 2005) was the first review for ten years.

### Determining a self-sustaining population

The 2005 review defined a self-sustaining population as (for discussion, see Dudley 2005): ‘a population that survives at or increases beyond what is assessed to be a viable stable level in a natural state in the wild in Britain’.

### A review of Category C sub-categories

A review of the sub-categories used for Category C was undertaken in 2005 and the new sub-category C6 was added (see above). This sub-category was added in recognition that over time a naturalized species may not adapt to changes in the British countryside and no longer maintain a self-sustaining population. Lady Amherst's Pheasant is the first species to be added to C6.

### A review of non-native species on Category E

The following Category E species were reviewed but none was admitted to Category C (see Dudley 2005 for individual species reviews):

- Black Swan *Cygnus atratus* E\* (for admission to C1)
  - Bar-headed Goose *Anser indicus* E\* (for admission to C1)
  - Emperor Goose *Anser canagicus* E\* (for admission to C1)
  - Ruddy Shelduck BDE\* (for admission to C1)
  - Muscovy Duck *Cairina moschata* E\* (for admission to C1)
  - Wood Duck *Aix sponsa* E\* (for admission to C1)
  - Black-crowned Night Heron *Nycticorax nycticorax* AE\* (for admission to C2)
  - Sacred Ibis E (for admission to C5)
  - Reeves's Pheasant *Syrnaticus reevesii* E\* (for admission to C1)
  - Helmeted Guineafowl *Numida meleagris* E\* (for admission to C1)
  - Rosy-faced Lovebird *Agapornis roseicollis* E\* (for admission to C1)
  - Blue-crowned Parakeet *Aratinga acuticaudata* E\* (for admission to C1)
  - Monk Parakeet *Myiopsitta monachus* E\* (for admission to C1)
  - Eagle Owl *Bubo bubo* E\* (for admission to C1)
- \* denotes species found breeding in the wild in Britain.

All of these species, bar Sacred Ibis, have been recorded breeding in the wild in Britain (Category E\*) with most species showing an increase in the number of breeding pairs recorded. The total number of known breeding pairs for each species was deemed insufficient to represent a self-sustaining population. For many species, e.g. Black Swan, the breeding pairs were so widely spread geographically that they were deemed not to represent a viable population, but pairs which are likely to be unrelated and unlikely to interact with one another due to their geographical spread and isolation.

For other areas covered by the 2005 review (e.g. admission of species to C2), see Dudley (2005).

### Species to monitor

A number of the species reviewed in 2005 should be monitored closely in order to assess their future admission to Category C and the British List.

#### **Black Swan** *Cygnus atratus*

This species is a native of Australia that is popular in wildfowl collections and, due to escapes, increasing numbers continue to be reported in the wild both in Britain and elsewhere in Europe. One bird has been recorded in Iceland (Iceland Review 2007) and is believed to have originated from Cambridgeshire where a Black Swan was known to be associating with wintering Whooper Swans *Cygnus cygnus*: its disappearance from Cambridgeshire coincided with the Whooper Swans departing for their winter grounds (S.P. Dudley pers. obs.).

The British non-native population appears to be stable (Table 3). The number of reported breeding pairs differs markedly year on year, e.g. nine pairs in 2001 and only two pairs in 2002 (Ogilvie & RBBP 2001, 2002, 2003).

The reduced number found breeding in 2002, plus negative reports from four of the 2001 breeding localities, supports the view that such isolated pairs cannot be deemed a self-sustaining population (Dudley 2005). However, there remains the possibility that this species is capable of naturalization and that local breeding populations may establish.

**Table 3.** Annual maximum site counts of Black Swan *Cygnus atratus*, and numbers of sites occupied, from Wetland Bird Survey (WeBS) counts 1994–2007. Note - figures represent numbers of sites with the specified number of birds.

Birds	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
1	29	23	35	24	27	52	51	44	40	47	37	55	36	33
2	6	7	8	9	17	17	21	18	20	18	24	20	24	15
3	2	1	1	2	6	2	6	3	3	8	6	6	7	6
4	0	0	0	1	1	1	2	3	4	1	5	1	4	3
5+	0	1	1	1	3	6	7	3	2	2	2	4	3	5
<b>Maximum possible</b>														
total birds	47	45	64	62	104	136	169	116	115	125	136	145	141	122
Sites	37	32	45	37	54	78	87	71	69	76	74	86	74	62

In Europe, the Black Swan is both widespread and increasing in numbers with national populations of over 5–45 reported from Belgium, France, Germany and Italy, 60–70 from the Netherlands, occasional records also from Spain, Switzerland and the Ukraine. In Austria a population of around 60 birds was controlled between 1990 and 1999 (Banks *et al.* 2008).

#### **Muscovy Duck** *Cairina moschata*

This species is a native of South America which is popular in captivity and has been subject to domestication. The domesticated origin is the cause of the unusual and varied plumage displayed by birds found in Britain.

The species is widely reported in the wild from many parts of Britain and two localised populations are known to have established (Table 4). A population at Lothing/Oulton Broad (Suffolk), which reached at least 102 birds in 1994 but had disappeared completely in 1999, is presumed to have been culled, with no subsequent build up of birds despite the occasional reports of birds still present in the area (A. Musgrove pers. comm.). In Ely (Cambridgeshire), the local population has already overcome one culling attempt by the local authority and based only on known current numbers and productivity this population is deemed to be self-sustaining (Dudley 2005). There is, however, debate about the viability of these localized populations in terms of stability and longevity of an isolated, inbreeding population originating from domesticated stock, and the population's dependency on supplementary feeding (BOU 2009) which occurs at most sites. Further research is required with regard to the viability of these populations and, as a result, despite the presence of the apparently self-sustaining population in Cambridgeshire, this species is at present not admitted to the British List.

Away from Cambridgeshire and Suffolk, the total number of birds reported via WeBS remains variable, as does the number of sites from where these birds are recorded. WeBS data, however, do appear to show a decline in the number of single bird sites. The most important current sites are Dane Valley (Cheshire) with a maximum count of 14 birds in 2007, Brayford Pool, Lincoln (Lincolnshire), with a maximum count of 23 birds in 2007, and Fort Henry Ponds/Exton Park Lakes (Rutland) with a maximum count of 43 birds in 2006 (27 birds in 2007). However, the establishment of the localized populations suggests that this species is capable of further expansion in Britain.

**Table 4.** Annual maximum site counts of Muscovy Duck *Cairina moschata*, and number of sites occupied, from Wetland Bird Survey (WeBS) counts 1994–2007. <sup>a</sup> Note - figures represent numbers of sites with the specified number of birds.

Birds	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
1	5	7	7	16	20	24	26	14	17	14	21	15	11	4
2–4	5	5	5	9	18	13	16	18	14	14	10	15	16	16
5–9	1	1	2	4	4	7	4	5	2	4	6	6	5	3
10–19	1	1	2	2	2	1	5	2	5	1	2	0	0	1
20–29	0	0	0	0	1	0	2	3	0	0	0	1	1	2
30–39	0	0	0	1	1	0	0	0	0	0	0	0	0	0
40–59	0	0	0	0	0	0	0	0	0	0	0	0	1	0
60–79	0	0	0	1 <sup>b</sup>	0	0	0	0	0	0	0	0	0	0
80–99	0	1 <sup>b</sup>	1 <sup>b</sup>	0	0	0	0	0	0	0	0	0	0	0
100+	1 <sup>b</sup>	0	0	0	0	0	0	0	0	0	0	0	0	0
Maximum possible														
total birds <sup>c</sup>	41	35	58	123	150	120	194	186	137	86	117	117	148	131
Suffolk <sup>b</sup>	102	95	99	69	33	0	0	0	0	0	0	0	0	0
Sites	13	15	17	33	46	45	53	42	38	33	39	37	34	26

<sup>a</sup> excludes the currently established Cambridgeshire population

<sup>b</sup> former Suffolk Broads population

<sup>c</sup> excludes former Suffolk Broads population

#### **Sacred Ibis** *Threskiornis aethiopicus*

The native range of Sacred Ibis stretches from sub-Saharan Africa, through Egypt to Iraq. There is no evidence to indicate that this species has ever occurred naturally in Europe, e.g. no fossil records (Maurer-Chauviré 1993). However, the species is not uncommon in captivity and known escapes have occurred in the British countryside. Due to their size and colour and the areas of occurrence being popular with birdwatchers, they are easily observed when they do escape. Around 30 reports had been recorded up to 2000, all of single birds, although at this rate of escape, it is very unlikely that birds of a captive British origin will ever lead to the establishment of this species in Britain.

Nevertheless, since the 1970s, it has become popular for bird collections across Europe to breed free-flying groups of Sacred Ibis. These have become the source of breeding populations in Italy, Spain and France (Yésou & Clergeau 2005).

The French naturalized population includes an increasing population along the French Atlantic coast which originated from Branféré Zoo, Brittany. In 1990, with 150 breeding pairs established at the zoo, the young were allowed to fly free with many wandering widely along the nearby Atlantic coastline (Frémont 1995, Yésou 2005). Breeding in the wild was confirmed in 1993 (although it was suspected earlier). Breeding ceased at the zoo in 1997. Since 1993, colonies have been established along a 350-km stretch of coast from Golfe du Morbihan south to Brouage, and by 2005 the total population along this coastline numbered over 1100 breeding pairs (Yésou & Clergeau 2005).

Outside the breeding season these birds wander widely along the coastline as far north as the Basse-Normandie region (Yésou & Clergeau 2005), off which the Channel Islands lie. If birds continue to spread along the Basse-Normandie coast to the Cherbourg area (which they are likely to do on current evidence), then the sea crossing to the English south coast is less than 100 km at this point. The Sacred Ibis is an opportunistic feeder, its diet including invertebrates, fish, amphibians, and the eggs and young of birds. In France, Ibises have been observed predated the nests of Common Tern *Sterna hirundo*, Sandwich Tern *S. sandvicensis*, Black Tern *Chlidonias niger*, Whiskered Tern *C. hybrida*, Mallard *Anas platyrhynchos*, Black-winged Stilt *Himantopus himantopus*, Lapwing *Vanellus vanellus* and Cattle Egret *Bulbulcus ibis* in addition to native fish and amphibians (Yésou & Clergeau 2005). Such an increase in predation pressure could be cause for concern for several native species. Another aspect of this species' opportunistic foraging is its increasing habit of foraging at refuse tips and in the waste bins of fast food restaurants (Yésou & Clergeau 2005). Sacred Ibises in France have also been seen to compete with both Cattle Egrets and Little Egrets *Egretta garzetta* for nest-sites and have forced pairs of both species out of their respective colony areas (Kayser *et al.* 2005).

If or, more likely, when these birds cross the English Channel, they will qualify for Category C5 of the British List. The admission of any species to the British List needs to be based on factual evidence of their origins. The marking of the French population would help better monitor their spread not just throughout France, but also into neighbouring countries such as Britain. A single bird found along the southern English coast is unlikely to be traced to the French population without being marked, but should a flock of birds occur (to date there are no known occurrences of flocks escaping and being seen in Britain), or there is simply a rush of records of individual birds, then even without birds being individually marked, the likelihood of them being of French origin would be very high. This probability would increase once known escapees from captivity have been accounted for. This species appears likely to establish itself in Britain in the near future and given the species' gregarious nature and recent spread, its rate of establishment once it does occur in Britain could be fast.

### **Monk Parakeet** *Myiopsitta monachus*

Parakeets are very popular in captivity, with frequent escapes and subsequent sightings in the wild. Rose-ringed Parakeet *Psittacula krameri* has naturalized in Britain and many other countries and a further five species – Red-rumped Parrot *Psephotus haematonotus*, Rosy-faced Lovebird, Blue-crowned Parakeet, Monk Parakeet and Alexandrine Parakeet *Psittacula eupatria* – have been observed breeding in Britain (Ogilvie & RBBP 1999a, 1999b, 2000, 2001, 2002, 2003, 2004, Holling & RBBP 2007).

The Monk Parakeet is a native of South America but due to its popularity in the bird trade, it has been transported around the globe and naturalized populations have established in many countries including Brazil, Japan, the US and Spain. In Britain, the species has been found breeding in Hertfordshire, Greater London,

Surrey, Wiltshire, Devon and Cheshire (Ogilvie & RBBP 1999a, 1999b, 2000, 2001, 2002, 2003, 2004, Holling & RBBP 2007, Tayleur in press; Table 5).

**Table 5.** Past and present populations of breeding Monk Parakeets *Myiopsitta monachus* in Britain

County	Number of birds	Period	Data source
<i>Current breeding populations</i>			
Hertfordshire	40	2005	Holling & RBBP (2007)
East London	c. 25	2008	S.P.D
West London	5–10	2008	S.P.D
<i>Former breeding occurrence</i>			
Devon	30	1987–98	Ogilvie & RBBP (1999a,
Cheshire	9	1988–93	1999b, 2000, 2001, 2002,
Surrey	2	1996–2001	2003, 2004), Tayleur (in
Wiltshire	8	2002	press)

In 2008 Defra commissioned research into the feasibility of controlling the Hertfordshire population. To date this has involved trialling a number of techniques including removal of a communal nesting/roosting structure (H. Thomas pers. comm.).

Nevertheless, with established populations in other countries, and growing numbers at several British sites, it is likely that this species will become established in the future (Tayleur in press) unless there is intervention. Red-rumped Parrot, Rosy-faced Lovebird, Blue-crowned Parakeet and Alexandrine Parakeet remain unlikely species for establishment at current levels.

### **Eagle Owl** *Bubo bubo*

The Eagle Owl is a widespread and ecologically adaptable species, occupying a range of habitats from the deserts of North Africa to the forests of northern Fennoscandia. BOURC, however, treat it as a non-native species in Britain (Melling *et al.* 2008) as there is no evidence to suggest the species has occurred naturally since the Mesolithic period (c. 9000–10 000 years BP; Stewart 2007).

The species is very popular in the bird trade and with falconers. It has been kept in captivity in Britain since at least 1678, the date of the first bird book in English (Ray 1678), and is known to have been bred in captivity since 1849 (Gurney 1849).

The Independent Bird Register (IBR) operates a voluntary registration scheme to reunite keepers with lost birds. The IBR estimates that there are around 3000 captive Eagle Owls in Britain. Their data show that between 1994 and 2007 the escape rate of birds registered was 28% (this does not take account of deliberate releases).

Assuming that the number of birds in captivity has remained stable, for the 13-year period this would extrapolate to 839 Eagle Owls escaping from captivity (Melling *et al.* 2008).

In addition to escapes, it is known that Eagle Owls are deliberately released, often in pairs. During research on the species, at least one breeder indicated they would release young birds into the wild if they were unable to find buyers (S.P. Dudley pers. obs.).

From these escapes and releases there is now an established history of the species breeding in the wild in Britain in contemporary times (Holling & RBBP 2007, Melling *et al.* 2008). The RBBP recently published a summary of their data (Holling & RBBP 2007) and this is summarized in Table 6.

The data in Table 6 do not represent the total number of birds present in the British countryside, but it is clear that there was an increase in the number of birds reported in 1996, and then again from 2004. In addition, there are numerous unsubstantiated reports of individual birds, even pairs, at large in the British countryside (Melling *et al.* 2008).

It is evident that with such a large British captive population, the high escape risk, the number of birds deliberately released and the longevity of individuals living in the wild (Toms 2009, 2010), this species is very likely to become established in the near future.

**Table 6.** Numbers of breeding pairs and other individual Eagle Owls *Bubo bubo* reported to the Rare Breeding Birds Panel 1984–2007 (Holling & RBBP 2007). Note that, at the time of writing, only limited data were available for 2006 and 2007 (indicated by square brackets). Reproduced with the kind permission of RBBP.

Year	Breeding Pairs	Min. no. of additional Individuals	Year	Breeding Pairs	Min. no. of additional Individuals
1984	1	0	1996	0	4
1985	1	0	1997	1	2
1986	0	1	1998	1	1
1987	0	1	1999	1	2
1988	0	1	2000	1	2
1989	0	1	2001	1	2
1990	0	1	2002	1	3
1991	0	1	2003	2	1
1992	0	1	2004	1	6
1993	1	1	2005	2	13
1994	0	1	2006	[1]	[13]
1995	0	1	2007	[2]	[4]

## Recommendations

Formal reporting and recording of all non-native species is essential for accurately assessing a species' true status and whether or not the species may ever qualify for admission to Category C of the British List. BOURC's rationale for determining population sustainability and admissibility to Category C of the List was set out in 'Changes to Category C of the British List' (Dudley 2005).

To assist with monitoring of any establishments, either where there is thought to be a likelihood of further establishment, or where there is considered to be a conservation concern over further establishment of a species, existing populations of naturalized non-native species should ideally be marked in order to monitor the spread and likely establishment in other areas and countries. However, it should be noted that, in the UK, it is an offence under Schedule 14 of the Wildlife & Countryside Act to re-release a non-native species back in to the wild; other countries may have similar legislation. Nevertheless, if non-native species are allowed to persist, then the potential establishment of non-native species can only be monitored effectively by some form of marking programme. The relevant authorities, be these national or at European level, should consider such marking schemes as obligatory in order to monitor the potential spread of non-native species across national boundaries.

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