

= Chough =

Two species of chough (pronunciation : / ʔtʔʔf / " CHUFF ") constitute the genus *Pyrrhocorax* of the Corvidae (crow) family of birds . These are the red @-@ billed chough (*Pyrrhocorax pyrrhocorax*) , and the Alpine or yellow @-@ billed chough (*P. graculus*) . The white @-@ winged chough of Australia , despite its name , is a member of the family Corcoracidae and only distantly related .

The choughs have black plumage and brightly coloured legs , feet , and bills , and are resident in the mountains of southern Eurasia and North Africa . They have long broad wings and perform spectacular aerobatics . Both species pair for life and display fidelity to their breeding sites , which are usually caves or crevices in a cliff face . They build a lined stick nest and lay three to five eggs . They feed , usually in flocks , on short grazed grassland , taking mainly invertebrate prey , supplemented by vegetable material or food from human habitation , especially in winter .

Changes in agricultural practices , which have led to local population declines and range fragmentation , are the main threats to this genus , although neither species is threatened globally .

= = Taxonomy = =

The first member of the genus to be described was the red @-@ billed chough , named as *Upupa pyrrhocorax* by Linnaeus in his *Systema Naturae* in 1758 . His genus *Upupa* contained species that had a long curved bill and a short blunt tongue . These included the northern bald ibis and the hoopoe , birds now known to be completely unrelated to the choughs .

The Alpine chough was described as *Corvus graculus* by Linnaeus in the 1766 edition of the *Systema Naturae* . Although *Corvus* is the crow genus to which the choughs ' relatives belong , they were considered sufficiently distinctive to be moved to the new genus , *Pyrrhocorax* , by English ornithologist Marmaduke Tunstall in his 1771 *Ornithologia Britannica* , The genus name is derived from Ancient Greek *purrhos* (?????? , ? flame @-@ coloured ?) and *korax* (?????? , ? Raven , crow ?) . " Chough " was originally an alternative onomatopoeic name for the jackdaw , *Corvus monedula* , based on its call . The similar red @-@ billed chough , formerly particularly common in Cornwall , became known initially as " Cornish chough " and then just " chough " , the name transferring from one species to the other .

The fossil record from the Pleistocene of Europe includes a form similar to the Alpine chough , and sometimes categorised as an extinct subspecies of that bird , and a prehistoric form of the red @-@ billed chough , *P. p. primigenius* . There are eight generally recognised extant subspecies of red @-@ billed chough , and two of Alpine , although all differ only slightly from the nominate forms . The greater subspecies diversity in the red @-@ billed species arises from an early divergence of the Asian and geographically isolated Ethiopian races from the western forms .

The closest relative of the choughs as indicated by a study of molecular phylogeny is the ratchet @-@ tailed treepie (*Temnurus temnurus*) and they form a clade that is sister to the remaining living members of the corvidae . The genus *Pyrrhocorax* species differ from *Corvus* in that they have brightly coloured bills and feet , smooth , not scaled tarsi and very short , dense nasal feathers . Choughs have uniformly black plumage , lacking any paler areas as seen in some of their relatives . The two *Pyrrhocorax* are the main hosts of two specialist chough fleas , *Frontopsylla frontalis* and *F. laetus* , not normally found on other corvids .

The Australian white @-@ winged chough , *Corcorax melanorhamphos* , despite its similar shape and habits , is only distantly related to the true choughs , and is an example of convergent evolution .

= = Distribution and habitat = =

Choughs breed in mountains , from Morocco and Spain eastwards through southern Europe and the Alps , across Central Asia and the Himalayas to western China . The Alpine chough is also found in Corsica and Crete , and the red @-@ billed chough has populations in Ireland , the UK , the

Isle of Man , and two areas of the Ethiopian Highlands . Both species are non-migratory residents throughout their range , only occasionally wandering to neighbouring countries .

These birds are mountain specialists , although red-billed choughs also use coastal sea cliffs in Ireland , Great Britain , and Brittany , feeding on adjacent short grazed grassland or machair ; the small population on La Palma , one of the Canary Islands , is also coastal . The red-billed chough more typically breeds in mountains above 1 000 m (3 000 ft) in Europe , 2 000 m (6 000 ft) in North Africa and 2 400 m (7 900 ft) in the Himalayas . In that mountain range it reaches 6 000 metres (20 000 ft) in the summer , and has been recorded at 7 950 metres (26 080 ft) altitude on Mount Everest . The Alpine chough breeds above 1 260 m (4 130 ft) in Europe , 2 880 m (9 450 ft) in Morocco , and 3 500 m (11 500 ft) in the Himalayas . It has nested at 6 500 m (21 300 ft) , higher than any other bird species , and it has been observed following mountaineers ascending Mount Everest at an altitude of 8 200 m (26 900 ft) .

Where the two species occur in the same mountains , the Alpine species tends to breed at a higher elevation than its relative , since it is better adapted for a diet at high altitudes .

= = Description = =

The choughs are medium-sized corvids ; the red-billed chough is 39 ? 40 centimetres (15 ? 16 in) in length with a 73 ? 90 centimetres (29 ? 35 in) wingspan , and the Alpine chough averages slightly smaller at 37 ? 39 (14 . 5 ? 15 . 5 in) length with a 75 ? 85 cm (30 ? 33 in) wingspan . These birds have black plumage similar to that of many *Corvus* crows , but they are readily distinguished from members of that genus by their brightly coloured bills and legs . The Alpine chough has a yellow bill and the red-billed chough has a long , curved , red bill ; both species have red legs as adults . The sexes are similar , but the juvenile of each species has a duller bill and legs than the adult and its plumage lacks the glossiness seen in older birds . Other physical distinctions are summarised in the table below .

The two choughs are distinguishable from each other by their bill colour , and in flight the long broad wings and short tail of the red-billed give it a silhouette quite different from its slightly smaller yellow-billed relative . Both species fly with loose deep wing beats , and frequently use their manoeuvrability to perform acrobatic displays , soaring in the updraughts at cliff faces then diving and rolling with fanned tail and folded wings .

The red-billed chough's loud , ringing chee-ow call is similar in character to that of other corvids , particularly the jackdaw , although it is clearer and louder than the call of that species . In contrast , the Alpine chough has rippling preep and whistled sweeeooo calls quite unlike the crows . Small subspecies of both choughs have higher frequency calls than larger races , as predicted by the inverse relationship between body size and frequency .

= = Behaviour and ecology = =

= = Breeding = =

Choughs are monogamous , and show high partner and site fidelity . Both species build a bulky nest of roots , sticks and plant stems lined with grass , fine twiglets or hair . It is constructed on a ledge , in a cave or similar fissure in a cliff face , or in man-made locations like abandoned buildings , quarries or dams . Red-billed will also sometimes use occupied buildings such as Mongolian monasteries . The choughs are not colonial , although in suitable habitat several pairs may nest in close proximity .

Both species lay 3 ? 5 normally whitish eggs blotched with brown or grey , which are incubated by the female alone . The chicks hatch after two to three weeks . Red-billed chough chicks are almost naked , but the chicks of the higher altitude Alpine chough hatch with a dense covering of natal down . The chicks are fed by both parents and fledge in 29 ? 31 days after hatching for Alpine

chough , and 31 ? 41 days for red @-@ billed .

The Alpine chough lays its eggs about one month later than its relative , although breeding success and reproductive behaviour are similar . The similarities between the two species presumably arose because of the same strong environmental constraints on breeding behaviour . The first @-@ year survival rate of the juvenile red @-@ billed chough is 72 @. @ 5 percent , and for the Alpine it is 77 % . The annual adult survival rate is 83 ? 92 % for Alpine , but is unknown for red @-@ billed .

= = = Feeding = = =

In the summer , both choughs feed mainly on invertebrates such as beetles , snails , grasshoppers , caterpillars , and fly larvae . Ants are a favoured food of the red @-@ billed chough . Prey items are taken from short grazed pasture , or in the case of coastal populations of red @-@ billed chough , areas where plant growth is hindered by exposure to coastal salt spray or poor soils . The chough 's bill may be used to pick insects off the surface , or to dig for grubs and other invertebrates . The red @-@ billed chough typically excavates to 2 ? 3 cm (0 @. @ 79 ? 1 @. @ 18 in) in the thin soils of its feeding areas , but it may dig to 10 ? 20 cm (3 @. @ 9 ? 7 @. @ 9 in) in suitable conditions .

Plant matter is also eaten , and red @-@ billed chough will take fallen grain where the opportunity arises ; it has been reported as damaging barley crops by breaking off the ripening heads to extract the corn . Alpine choughs rely more on fruit and berries at times of year when animal prey is limited , and will readily supplement their winter diet with food provided by tourist activities in mountain regions , including ski resorts , refuse dumps and picnic areas . Both *Pyrrhocorax* species feed in flocks on open areas , often some distance from the breeding cliffs , particularly in winter . Feeding trips may cover 20 km (12 mi) distance and 1 @, @ 600 m (5 @, @ 200 ft) in altitude . In the Alps , the development of skiing above 3 @, @ 000 m (9 @, @ 800 ft) has enabled more Alpine choughs to remain at high levels in winter .

Where their ranges overlap , the two chough species may feed together in the summer , although there is only limited competition for food . An Italian study showed that the vegetable part of the winter diet for the red @-@ billed chough was almost exclusively *Gagea* bulbs , whilst the Alpine chough took berries and hips . In June , red @-@ billed choughs fed mainly on caterpillars whereas Alpine choughs ate cranefly pupae . Later in the summer , the Alpine chough consumed large numbers of grasshoppers , while the red @-@ billed chough added cranefly pupae , fly larvae and beetles to its diet . In the eastern Himalayas in November , Alpine choughs occur mainly in Juniper forests where they feed on juniper berries , differing ecologically from the red @-@ billed choughs in the same region and at the same time of year , which dig for food in the soil of the villages ' terraced pastures .

= = = Natural threats = = =

Predators of the choughs include the peregrine falcon , golden eagle and Eurasian eagle @-@ owl , while the common raven will take nestlings . In northern Spain , red @-@ billed choughs preferentially nest near lesser kestrel colonies ; the falcon , which eats only insects , provides a degree of protection against larger predators , and the chough benefits in terms of a higher breeding success . The red @-@ billed chough is occasionally parasitised by the great spotted cuckoo , a brood parasite for which the Eurasian magpie is the primary host .

The choughs host bird fleas , including two *Frontopsylla* species which are *Pyrrhocorax* specialist . Other parasites recorded on choughs include a cestode *Choanotaenia pirinica* , and various species of chewing lice in the genera *Brueelia* , *Menacanthus* and *Philopterus* . Blood parasites such as *Plasmodium* have been found in red @-@ billed choughs , but this is uncommon , and apparently does little harm . Parasitism levels are much lower than in some other passerine groups .

= = Status = =

Both *Pyrrhocorax* species have extensive geographical ranges and large populations ; neither is

thought to approach the thresholds for the global population decline criteria of the IUCN Red List (i.e. , declining more than 30 % in ten years or three generations) , and they are therefore evaluated as being of Least Concern . However , some populations , particularly on islands such as Corsica and La Palma are small and isolated .

Both choughs occupied more extensive ranges in the past , reaching to more southerly and lower altitude areas than at present , with the Alpine chough breeding in Europe as far south as southern Italy , and both the decline and range fragmentation continue . Red @-@ billed choughs have lost ground in most of Europe , and Alpine choughs have lost many breeding sites in the east of the continent . In the Canary Islands , the red @-@ billed chough is now extinct on two of the islands on which it formerly bred , and the Alpine was lost from the archipelago altogether .

The causes of the decline include the fragmentation and loss of open grasslands to scrub or human activities such as the construction of ski resorts , and a longer @-@ term threat comes from global warming which would cause the species ' preferred Alpine climate zone to shift to higher , more restricted areas , or locally to disappear entirely .

The red @-@ billed chough , which breeds at lower levels , has been more affected by human activity , and the declines away from its main Alpine breeding areas have seen it categorised as " vulnerable " in Europe . Only in Spain is it still common , and it has recently expanded its range in that country by nesting in old buildings in areas close to its traditional mountain breeding sites .

= = In culture = =

Further information : Red @-@ billed chough

Although these are mainly mountain species with limited interactions with humans , the red @-@ billed chough has a coastal population in the far west of its range , and has cultural connections particularly with Cornwall , where it appears on the Cornish Coat of Arms . A legend from that county says that King Arthur did not die but was transformed into a red @-@ billed chough , and hence killing this bird was unlucky .

The red @-@ billed chough was formerly reputed to be a habitual thief of small objects from houses , including burning wood or lighted candles , which it would use to set fire to haystacks or thatched roofs .

As a high altitude species with limited contact with humans until the development of mountain tourism activities , the Alpine chough has little cultural significance . It was , however , featured together with its wild mountain habitat in Olivier Messiaen ? s Catalogue d 'oiseaux (" Bird catalogue ") , a piano piece written in 1956 ? 58 . Le chocard des alpes (" The Alpine Chough ") is the opening piece of Book 1 of the work .

A group of choughs may be referred to fancifully or jocularly as a chattering or clattering . (See also : List of collective nouns)