

= Nuthatch =

The nuthatches constitute a genus , *Sitta* , of small passerine birds belonging to the family Sittidae . Characterised by large heads , short tails , and powerful bills and feet , nuthatches advertise their territory using loud , simple songs . Most species exhibit grey or bluish upperparts and a black eye stripe .

Most nuthatches breed in the temperate or montane woodlands of the Northern Hemisphere , although two species have adapted to rocky habitats in the warmer and drier regions of Eurasia . However , the greatest diversity is in Southern Asia , and similarities between the species have made it difficult to identify distinct species . All members of this genus nest in holes or crevices . Most species are non @-@ migratory and live in their habitat year @-@ round , although the North American red @-@ breasted nuthatch migrates to warmer regions during the winter . A few nuthatch species have restricted ranges and face threats from deforestation .

Nuthatches are omnivorous , eating mostly insects , nuts and seeds . They forage for insects hidden in or under bark by climbing along tree trunks and branches , sometimes upside @-@ down . They forage within their territories when breeding , but they may join mixed feeding flocks at other times . Their habit of wedging a large food item in a crevice and then hacking at it with their strong bills gives this group its English name .

= = Taxonomy = =

The nuthatch family , Sittidae , was described by René @-@ Primevère Lesson in 1828 . Sometimes the wallcreeper (*Tichodroma muraria*) , which is restricted to the mountains of southern Eurasia , is placed in the same family as the nuthatches , but in a separate subfamily " *Tichodromadinae* " , in which case the nuthatches are classified in the subfamily " *Sittinae* " . However , it is more often placed in a separate family , the *Tichodromadidae* . The wallcreeper is intermediate in its morphology between the nuthatches and the treecreepers , but its appearance , the texture of its plumage , and the shape and pattern of its tail suggest that it is closer to the former taxon . The nuthatch vanga of Madagascar (formerly known as the coral @-@ billed nuthatch) and the sittellas from Australia and New Guinea were once placed in the nuthatch family because of similarities in appearance and lifestyle , but they are not closely related . The resemblances arose via convergent evolution to fill an ecological niche .

The nuthatches ' closest relatives , other than the wallcreeper , are the treecreepers , and the two (or three) families are sometimes placed in a larger grouping with the wrens and gnatcatchers . This superfamily , the Certhioidea , is proposed on phylogenetic studies using mitochondrial and nuclear DNA , and was created to cover a clade of (four or) five families removed from a larger grouping of passerine birds , the Sylvioidea .

The nuthatches are all in the genus *Sitta* Linnaeus , 1758 , a name derived from *sitt?* , Ancient Greek for this bird . Nuthatch refers to the propensity of some species to wedge a large insect or seed in a crack and hack at it with their strong bills . Species boundaries in the nuthatches are difficult to define . The red @-@ breasted nuthatch , Corsican nuthatch and Chinese nuthatch have breeding ranges separated by thousands of kilometres , but are similar in habitat preference , appearance and song . They were formerly considered to be one species , but are now normally split into three and comprise a superspecies along with the Krüper 's and Algerian nuthatch . Unusually for nuthatches , all five species excavate their own nests .

The Eurasian , chestnut @-@ vented , Kashmir and chestnut @-@ bellied nuthatches form another superspecies and replace each other geographically across Asia . They are currently considered to be four separate species , but the south @-@ Asian forms were once believed to be a subspecies of the Eurasian nuthatch . A recent change in this taxonomy is a split of the chestnut @-@ bellied nuthatch into three species , namely the Indian nuthatch , *Sitta castanea* , found south of the Ganges , the Burmese nuthatch , *Sitta neglecta* , found in southeast Asia , and the chestnut @-@ bellied nuthatch *sensu strictu* , *S. cinnamoventris* , which occurs in the Himalayas . Mitochondrial DNA studies have demonstrated that the white @-@ breasted northern subspecies of Eurasian

nuthatch , *S. (europea) arctica* , is distinctive , and also a possible candidate for full species status . This split has been accepted by the British Ornithologists ' Union .

A 2006 review of Asian nuthatches suggested that there are still unresolved problems in nuthatch taxonomy and proposed splitting the genus *Sitta* . This suggestion would move the red- and yellow @-@ billed south Asian species (velvet @-@ fronted , yellow @-@ billed and sulphur @-@ billed nuthatches) to a new genus , create a third genus for the blue nuthatch , and possibly a fourth for the beautiful nuthatch .

The fossil record for this group appears to be restricted to a foot bone of an early Miocene bird from Bavaria which has been identified as an extinct representative of the climbing Certhioidea , a clade comprising the treecreepers , wallcreeper and nuthatches . It has been described as *Certhiops rummeli* . Two fossil species have been described in the *Sitta* genus : *S. cuvieri* Gervais , 1852 and *S. senogalliensis* Portis , 1888 , but probably not belong to nuthatches .

= = Description = =

Nuthatches are compact birds with short legs , compressed wings , and square 12 @-@ feathered tails . They have long , sturdy , pointed bills and strong toes with long claws . Nuthatches have blue @-@ grey backs (violet @-@ blue in some Asian species , which also have red or yellow bills) and white underparts , which are variably tinted with buff , orange , rufous or lilac . Although head markings vary between species , a long black eye stripe , with contrasting white supercilium , dark forehead and blackish cap is common . The sexes look similar , but may differ in underpart colouration , especially on the rear flanks and under the tail . Juveniles and first @-@ year birds can be almost indistinguishable from adults .

The sizes of nuthatches vary , from the large giant nuthatch , at 195 mm (7 @-@ 7 in) and 36 ? 47 g (1 @-@ 3 ? 1 @-@ 7 oz) , to the small brown @-@ headed nuthatch and the pygmy nuthatch , both around 100 mm (3 @-@ 9 in) in length and about 10 g (0 @-@ 35 oz) .

Nuthatches are very vocal , using an assortment of whistles , trills and calls . Their breeding songs tend to be simple and often identical to their contact calls but longer in duration . The red @-@ breasted nuthatch , which coexists with the black @-@ capped chickadee throughout much of its range , is able to understand the latter species ' calls . The chickadee has subtle call variations that communicate information about the size and risk of potential predators . Many birds recognise the simple alarm calls produced by other species , but the red @-@ breasted nuthatch is able to interpret the chickadees ' detailed variations and to respond appropriately .

= = Species = =

The species diversity for Sittidae is greatest in southern Asia (possibly the original home of this family) , where about 15 species occur , but it has representatives across much of the Northern Hemisphere . The currently recognised nuthatch species are tabulated below .

= = Distribution and habitat = =

Members of the nuthatch family live in most of North America and Europe and throughout Asia down to the Wallace Line . Nuthatches are sparsely represented in Africa ; one species lives in a small area of northeastern Algeria and a population of the Eurasian nuthatch subspecies , *S. e. hispaniensis* , lives in the mountains of Morocco . Most species are resident year @-@ round . The only significant migrant is the red @-@ breasted nuthatch , which winters widely across North America , deserting the northernmost parts of its breeding range in Canada ; it has been recorded as a vagrant in Bermuda , Iceland and England .

Most nuthatches are woodland birds and the majority are found in coniferous or other evergreen forests , although each species has a preference for a particular tree type . The strength of the association varies from the Corsican nuthatch , which is closely linked with Corsican pine , to the catholic habitat of the Eurasian nuthatch , which prefers deciduous or mixed woods but breeds in

coniferous forests in the north of its extensive range . However , the two species of rock nuthatches are not strongly tied to woodlands : they breed on rocky slopes or cliffs , although both move into wooded areas when not breeding . In parts of Asia where several species occur in the same geographic region , there is often an altitudinal separation in their preferred habitats .

Nuthatches prefer a fairly temperate climate ; northern species live near sea level whereas those further south are found in cooler highland habitats . Eurasian and red @-@ breasted nuthatches are lowland birds in the north of their extensive ranges , but breed in the mountains further south ; for example , Eurasian nuthatch , which breeds where the July temperature range is 16°C to 27°C (61°F to 81°F) , is found near sea level in Northern Europe , but between 1 @, @ 750 and 1 @, @ 850 m (5 @, @ 740 and 6 @, @ 070 ft) altitude in Morocco . The velvet @-@ fronted nuthatch is the sole member of the family which prefers tropical lowland forests .

= = Behaviour = =

= = = Nesting , breeding and survival = = =

All nuthatches nest in cavities ; except for the two species of rock nuthatches , all use tree holes , making a simple cup lined with soft materials on which to rest eggs . In some species the lining consists of small woody objects such as bark flakes and seed husks , while in others it includes the moss , grass , hair and feathers typical of passerine birds .

Members of the red @-@ breasted nuthatch superspecies excavate their own tree holes , although most other nuthatches use natural holes or old woodpecker nests . Several species reduce the size of the entrance hole and seal up cracks with mud . The red @-@ breasted nuthatch makes the nest secure by daubing sticky conifer resin globules around the entrance , the male applying the resin outside and the female inside . The resin may deter predators or competitors (the resident birds avoid the resin by diving straight through the entrance hole) . The white @-@ breasted nuthatch smears blister beetles around the entrance to its nest , and it has been suggested that the unpleasant smell from the crushed insects deters squirrels , its chief competitor for natural tree cavities .

The western rock nuthatch builds an elaborate flask @-@ shaped nest from mud , dung and hair or feathers , and decorates the nest 's exterior and nearby crevices with feathers and insect wings . The nests are located in rock crevices , in caves , under cliff overhangs or on buildings . The eastern rock nuthatch builds a similar but less complex structure across the entrance to a cavity . Its nest can be quite small but may weigh up to 32 kg (70 lb) . This species will also nest in river banks or tree holes and will enlarge its nest hole if the cavity is too small .

Nuthatches are monogamous . The female produces eggs that are white with red or yellow markings ; the clutch size varies , tending to be larger for northern species . The eggs are incubated for 12 to 18 days by the female alone , or by both parents , depending on the species . The altricial (naked and helpless) chicks take between 21 and 27 days to fledge . Both parents feed the young , and in the case of two American species , brown @-@ headed and pygmy , helper males from the previous brood may assist the parents in feeding .

For the few species on which data are available , the average nuthatch lifespan in the wild is between 2 and 3 @. @ 5 years , although ages of up to 10 years have been recorded . The Eurasian nuthatch has an adult annual survival rate of 53 % and the male Corsican nuthatch 61 @. @ 6 % . Nuthatches and other small woodland birds share the same predators : accipiters , owls , squirrels and woodpeckers . An American study showed that nuthatch responses to predators may be linked to reproductive strategies . It measured the willingness of males of two species to feed incubating females on the nest when presented with models of a sharp @-@ shinned hawk , which hunts adult nuthatches , or a house wren , which destroys eggs . The white @-@ breasted nuthatch is shorter @-@ lived than the red @-@ breasted nuthatch , but has more young , and was found to respond more strongly to the egg predator , whereas the red @-@ breasted showed greater concern with the hawk . This supports the theory that longer @-@ lived species benefit from adult survival and future

breeding opportunities while birds with shorter life spans place more value on the survival of their larger broods .

Cold can be a problem for small birds that do not migrate . Communal roosting in tight huddles can help conserve heat and several nuthatch species employ it ? up to 170 pygmy nuthatches have been seen in a single roost . The pygmy nuthatch is able to lower its body temperature when roosting , conserving energy through hypothermia and a lowered metabolic rate .

== Feeding ==

Nuthatches forage along tree trunks and branches and are members of the same feeding guild as woodpeckers . Unlike woodpeckers and treecreepers , however , they do not use their tails for additional support , relying instead on their strong legs and feet to progress in jerky hops . They are able to descend head @-@ first and hang upside @-@ down beneath twigs and branches . Krüper 's nuthatch can even stretch downward from an upside @-@ down position to drink water from leaves without touching the ground . Rock nuthatches forage with a similar technique to the woodland species , but seek food on rock faces and sometimes buildings . When breeding , a pair of nuthatches will only feed within their territory , but at other times will associate with passing tits or join mixed @-@ species feeding flocks .

Insects and other invertebrates are a major portion of the nuthatch diet , especially during the breeding season , when they rely almost exclusively on live prey , but most species also eat seeds during the winter , when invertebrates are less readily available . Larger food items , such as big insects , snails , acorns or seeds may be wedged into cracks and pounded with the bird 's strong bill . Unusually for a bird , the brown @-@ headed nuthatch uses a piece of tree bark as a lever to pry up other bark flakes to look for food ; the bark tool may then be carried from tree to tree or used to cover a seed cache .

All nuthatches appear to store food , especially seeds , in tree crevices , in the ground , under small stones , or behind bark flakes , and these caches are remembered for as long as 30 days . Similarly , the rock nuthatches wedge snails into suitable crevices for consumption in times of need . European nuthatches have been found to avoid using their caches during benign conditions in order to save them for harsher times .

== Status ==

Some nuthatches , such as the Eurasian nuthatch and the North American species , have extensive ranges and large populations , and few conservation problems , although locally they may be affected by woodland fragmentation . In contrast , some of the more restricted species face severe pressures .

The endangered white @-@ browed nuthatch is found only in the Mount Victoria area of Burma , where forest up to 2 @,@ 000 m (6 @,@ 600 ft) above sea level has been almost totally cleared and habitat between 2 @,@ 000 ? 2 @,@ 500 m (6 @,@ 600 ? 8 @,@ 200 ft) is heavily degraded . Nearly 12 @,@ 000 people live in the Natma Taung national park which includes Mount Victoria , and their fires and traps add to the pressure on the nuthatch . The population of the white @-@ browed nuthatch , estimated at only a few thousand , is decreasing , and no conservation measures are in place . The Algerian nuthatch is found in only four areas of Algeria , and it is possible that the total population does not exceed 1 @,@ 000 birds . Fire , erosion , and grazing and disturbance by livestock have reduced the quality of the habitat , despite its location in the Taza National Park .

Deforestation has also caused population declines for the vulnerable Yunnan and yellow @-@ billed nuthatches . The Yunnan nuthatch can cope with some tree loss , since it prefers open pine woodland , but although still locally common , it has disappeared from several of the areas in which it was recorded in the early 20th century . The threat to yellow @-@ billed is particularly acute on Hainan , where more than 70 % of the woodland has been lost in the past 50 years due to shifting cultivation and the use of wood for fuel during Chinese government re @-@ settlement programmes .

Krüper 's nuthatch is threatened by urbanisation and development in and around mature coniferous forests , particularly in the Mediterranean coastal areas where the species was once numerous . A law promoting tourism came into force in Turkey in 2003 , further exacerbating the threats to their habitat . The law reduced bureaucracy and made it easier for developers to build tourism facilities and summer houses in the coastal zone where woodland loss is a growing problem for the nuthatch .