

Falcons and Falconry

A Wikipedia Compilation
by
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Falconry

Falconry is the hunting of wild quarry in its natural state and habitat by means of a trained bird of prey. There are two traditional terms used to describe a person involved in falconry: a falconer flies a falcon; an austringer (German origin) flies a hawk (*Accipiter* and some *buteos* and similar) or an eagle (*Aquila* or similar). In modern falconry the Red-tailed Hawk (*Buteo jamaicensis*) and the Harris hawk are often used. The words "hawking" and "hawker" have become used so much to mean petty traveling traders, that the terms "falconer" and "falconry" now apply to all use of trained birds of prey to catch game.

In early English falconry literature, the word "falcon" referred to a female falcon only, while the word "hawk" or "hawke" referred to a female hawk. A male hawk or falcon was referred to as a "tiercel" (sometimes spelled "tercel") as it was roughly one third less than the female in size.^{[1][2]} Many contemporary practitioners still use these words in their original meaning. The practice of hunting with a conditioned falconry bird is also called "hawking" or "gamehawking".

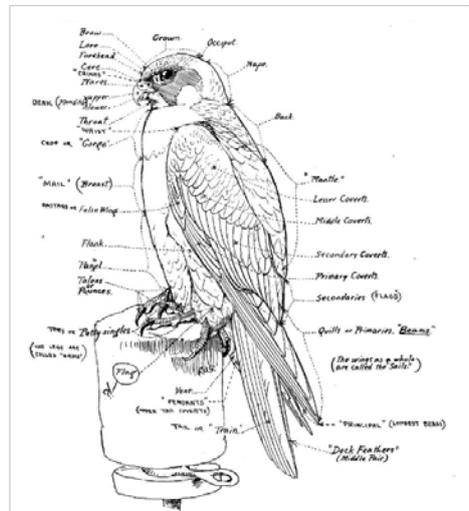


Chart by Louis Agassiz Fuertes (1920) illustrating falconers terminology.



Flying a Saker Falcon



A Goshawk

History

Detail of two falconers. Illustration from *De arte venandi cum avibus*, 1240s

Evidence suggests that the art of falconry may have begun in Mesopotamia, with the earliest accounts dating to approximately 2000 BC. Falcon was a symbolic bird of ancient Mongol tribes. There is some disagreement about whether such early accounts document the practice of falconry (from *The Epic of Gilgamesh* and others) or are misinterpreted depictions of humans with birds of prey.^{[3][4]} Falconry was probably introduced to Europe around AD 400, when the Huns and Alans invaded from the East. Frederick II of Hohenstaufen (1194–1250) is generally acknowledged as the most significant wellspring of traditional falconry knowledge. He is believed to have obtained firsthand knowledge of Arabic falconry during wars in the region (between June 1228–June 1229). He obtained a copy of Moamyn's manual on falconry and had it translated into Latin by Theodore of Antioch. Frederick II himself made corrections to the translation in 1241 resulting in *De Scientia Venandi per Aves*.^[5] King Frederick II is most recognized for his falconry treatise, *De arte venandi cum avibus* ("The Art of Hunting with Birds"). Written himself toward the end of his life, it is widely accepted as the first comprehensive book of falconry, but also notable in its contributions to ornithology and zoology. *De arte venandi cum avibus* incorporated a diversity of scholarly traditions from east to west, and is one of the earliest and most significant challenges to Aristotle's often flawed explanations of nature.^[6]

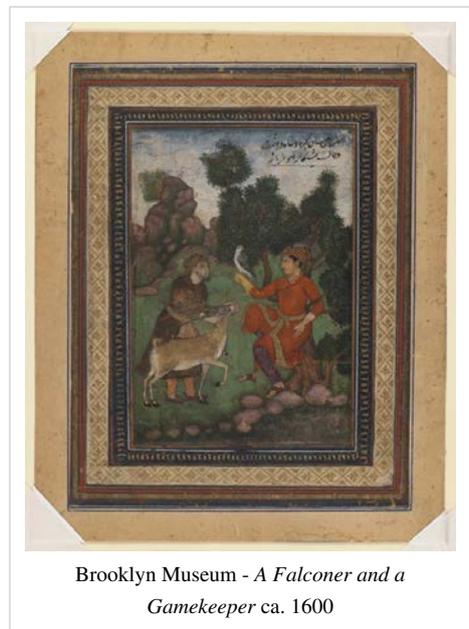
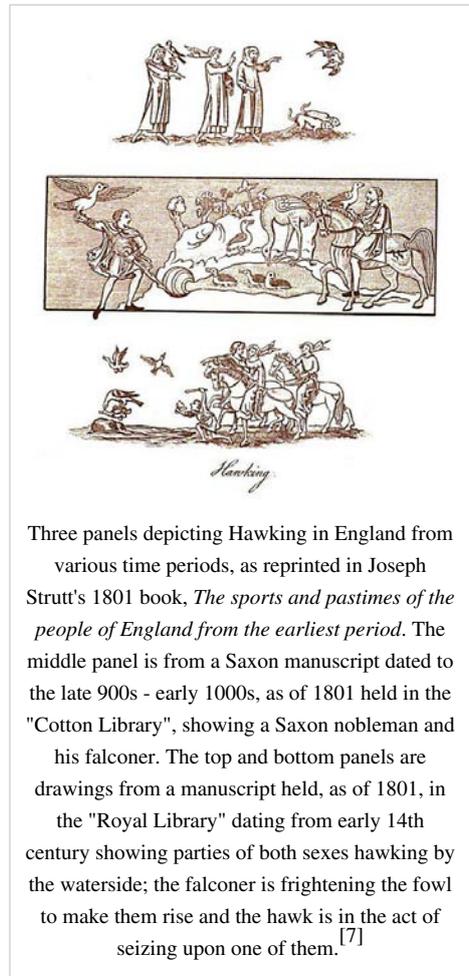
Historically, falconry was a popular sport and status symbol among the nobles of medieval Europe, the Middle East, and Mongolian Empire. Many historical illustrations left in Rashid al Din's "Compendium chronicles" book described falconry of the middle centuries with Mongol images. Falconry was largely restricted to the noble classes due to the prerequisite commitment of time, money, and space. In art and in other aspects of culture such as literature, falconry remained a status symbol long after it was no longer popularly practiced. The historical significance of falconry within lower social classes may be underrepresented in the archaeological record, due to a lack of surviving evidence, especially from nonliterate nomadic and non-agrarian societies. Within nomadic societies like the Bedouin, falconry was not practiced for recreation by noblemen. Instead, falcons were trapped and hunted on small game during the winter months in order to supplement a very limited diet.^[8]

In the UK and parts of Europe, falconry probably reached its zenith in the 17th century,^{[1][2]} but soon faded, particularly in the late 18th and 19th centuries, as firearms became the tool of choice for hunting (this likely took place throughout Europe and Asia in differing degrees). Falconry in the UK had a resurgence in the late 19th, early 20th century during which time a number of falconry books were published.^[9] This revival led to the introduction of falconry in North America in the early 1900s. Col R. Luff Meredith is recognized as the father of North American falconry.^[10]

Throughout the 20th century, modern veterinary practices and the advent of radio telemetry (transmitters attached to free-flying birds) increased the average lifespan of falconry birds and allowed falconers to pursue quarry and styles of flight that had previously resulted in the loss of their hawk or falcon.

Timeline

- **722-705 BC** - An Assyrian bas-relief found in the ruins at Khorsabad during the excavation of the palace of Sargon II (Sargon II) has been claimed to depict falconry. In fact, it depicts an archer shooting at raptors and an attendant capturing a raptor. A. H. Layard's statement in his 1853 book *Discoveries in the Ruins of Nineveh and Babylon* is "A falconer bearing a hawk on his wrist appeared to be represented in a bas-relief which I saw on my last visit to those ruins."
- **680 BC** - Chinese records describe falconry.
- **355 AD** - Nihon-shoki, a largely mythical narrative, records hawking first arriving in Japan as of the 16th emperor Nintoku from Baekje, one of the Three Kingdoms of Korea.
- **2nd-4th century** - the Germanic tribe of the Goths learned falconry from the Sarmatians.



- **5th century** - the son of Avitus, Roman Emperor 455-456, from the Celtic tribe of the Arverni who fought at the Battle of Châlons with the Goths against the Huns introduced falconry in Rome.
 - **500** - a Roman floor mosaic depicts a falconer and his hawk hunting ducks.
 - **early 7th century** - Prey caught by trained dogs or falcons is considered halal in Quran.^[11] By this time falconry was already popular in the Arabian Peninsula.
 - **818** - The Japanese Emperor Saga ordered someone to edit a falconry text named "Shinshuu Youkyou".
 - **875** - Western Europe and Saxon England practiced falconry widely.
 - **991** - The Battle of Maldon. A poem describing it says that before the battle, the Anglo-Saxons' leader Byrhtnoth "let his tame hawk fly from his hand to the wood".
 - **1070s** - The Bayeux Tapestry shows King Harold of England with a Hawk in one scene. It is said that the King owned the largest collection of books on the sport in all of Europe.
 - **c.1240s** - The treatise of an Arab falconer, Moamyn, was translated into Latin by Master Theodore of Antioch, at the court of Frederick II, it was called *De Scientia Venandi per Aves* and much copied.
 - **1250** - Frederick II wrote in the last years of his life a treatise on "The Art of Hunting with Birds": *De arte venandi cum avibus*.
 - **1390s** - In his *Libro de la caza de las aves*, Castilian poet and chronicler Pero López de Ayala attempts to compile all the available correct knowledge concerning falconry.
 - **1486** - See the *Boke of Saint Albans*
 - **early 16th century** - Japanese warlord Asakura Norikage (1476–1555) succeeded in captive breeding of goshawks.
 - **1600s** - Dutch records of falconry; the Dutch town of Valkenswaard was almost entirely dependent on falconry for its economy.
 - **1660s** - Tsar Alexis of Russia writes a treatise which celebrates aesthetic pleasures derived from falconry.
 - **1801** - James Strutt of England writes, "the ladies not only accompanied the gentlemen in pursuit of the diversion [falconry], but often practiced it by themselves; and even excelled the men in knowledge and exercise of the art."
 - **1934** - The first US falconry club, The Peregrine Club, is formed; it died out during World War II
 - **1941** - Falconer's Club of America formed
 - **1961** - Falconer's Club of America defunct
 - **1961** - North American Falconers Association (NAFA) formed
 - **1970** - Peregrine Falcon listed as an Endangered Species in the U.S., due primarily to the use of DDT as a pesticide (35 Federal Register 8495; June 2, 1970).
 - **1970** - The Peregrine Fund is founded, mostly by falconers, to conserve raptors, and focusing on Peregrines.
 - **1972** - DDT banned in the U.S. (EPA press release - December 31, 1972) but continues to be used in Mexico and other nations.
 - **1999** - Peregrine falcon removed from the Endangered Species list in the United States, due to reports that at least 1,650 peregrine breeding pairs existed in the U.S. and Canada at that time. (64 Federal Register 46541-558, August 25, 1999)
 - **2003** - A population study by the USFWS shows peregrine falcon numbers climbing ever more rapidly, with well over 3000 pairs in North America
 - **2006** - A population study by the USFWS shows peregrine falcon numbers still climbing. (Federal Register circa September 2006)
 - **2008** - USFWS rewrites falconry regulations virtually eliminating federal involvement. {Federal Register: October 8, 2008 (Volume 73, Number 196)}
 - **2010** - Falconry is inscribed on the Representative List of the Intangible Cultural Heritage of Humanity by the United Nations Educational, Scientific and Cultural Organization (UNESCO)
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The Book of St Albans

The often-quoted *Book of St Albans* or *Boke of St Albans*, first printed in 1486, often attributed to Dame Julia Berners, provides this hierarchy of hawks and the social ranks for which each bird was supposedly appropriate. The line numbers are not in the original.

1. Emperor: The Golden Eagle, Vulture, and Merloun
2. King: The Gyr Falcon and the Tercel of the Gyr Falcon
3. Prince: The Falcon Gentle and the Tercel Gentle
4. Duke: The Falcon of the Loch
5. Earl: The Falcon Peregrine
6. Baron: The Bustard
7. Knight: The Sacre and the Sacret
8. Esquire: The Lanere and the Laneret
9. Lady: The Marlyon
10. Young Man: The Hobby
11. Yeoman: The Goshawk
12. Poor Man: The Tercel
13. Priest: The Sparrowhawk
14. Holy Water Clerk: The Musket
15. Knave or Servant: The Kestrel

This list, however, was mistaken in several respects.

- 1) Vultures are not used for falconry.
- 3) 4) 5) These are usually said to be different names for the Peregrine Falcon. But there is an opinion that renders 4) as "rock falcon" = a peregrine from remote rocky areas, which would be bigger and stronger than other peregrines. This could also refer to the Scottish Peregrine.
- 6) The bustard is not a bird of prey, but a game species that was commonly hunted by falconers; this entry may have been a mistake for buzzard, or for *busard* which is French for "harrier"; but any of these would be a poor deal for barons; some treat this entry as "bastard hawk", possibly meaning a hawk of unknown lineage, or a hawk that couldn't be identified.
- 7) 8) Sakers were imported from abroad and very expensive, and ordinary knights and squires would be unlikely to have them. There are contemporary records of lanners native to England.
- 10) 15) Hobbies and kestrels are historically considered to be of little use for serious falconry. (The French name for the Hobby is *faucon hobereau*, *hobereau* meaning *local/country squire*. That may be the source of the confusion.), however King Edward I of England sent a falconer to catch hobbies for his use. Kestrels are coming into their own as worthy hunting birds, as modern falconers dedicate more time to their specific style of hunting. While not suitable for catching game for the falconer's table, kestrels are certainly capable of catching enough quarry that they can be fed on surplus kills through the molt.
- 12) There is an opinion^[12] that, since the previous entry is the goshawk, this entry ("*There is a Tercell. And that is for the powere [= poor] man.*") means a male goshawk and that here "poor man" means not a labourer or beggar but someone at the bottom end of the scale of landowners.

It can be seen that the relevance of the "Boke" to practical falconry past or present is extremely tenuous, and veteran British falconer Phillip Glasier dismissed it as "merely a formalised and rather fanciful listing of birds".



A Lady with Peregrine Falcon on horse

Falconry in Britain in 1973

A book about falconry published in 1973^[13] says this:

- Most falconry birds used in Britain were taken from the wild, either in Britain, or abroad and imported.
- Captive breeding was starting. It mentions a captive-bred goshawk and a brood of captive-bred redtails. It describes as a new and remarkable event captive breeding hybrid young in 1971 and 1972 from John Morris's female saker and Ronald Stevens's peregrine tiercel.
- Peregrine falcons were suffering from the post-World War II severe decline caused by pesticides. Taking wild peregrines in Britain was only allowed to train them to keep birds off Royal Air Force airfields to prevent birdstrikes.
- It does not mention telemetry.
- Harris hawks were known of but unusual. For example, the book lists a falconry meet on 4 days in August 1971 at White Hill and Leafield in Dumfriesshire in Scotland; the hawks flown were 11 goshawks and one Harris hawk, and the book felt it necessary to say what a Harris hawk is.
- The usual species for a beginner to begin on was a kestrel.
- A few falconers used golden eagles.
- Falcons in falconry would have bells on their legs so the hunters could find them.

Birds used in contemporary falconry

There are several categories of raptor that could possibly be used in falconry. They are also classed by falconers as:

- Broadwings: Golden Eagles, Buzzards, Harris hawk.
- Longwings: Peregrine Falcons, Lanner Falcon, Gyrfalcon.
- Shortwings: Accipiters (goshawks).

Harris's Hawk (*Parabuteo unicinctus*)

Parabuteo unicinctus is the sole representative of this genus worldwide. Arguably the best rabbit or hare raptor available anywhere, the Harris' Hawk is also adept at catching birds. Often captive-bred, the Harris' Hawk is remarkably popular because of its temperament and ability. The Harris Hawk is found in the wild living in groups or packs and hunts cooperatively, with a social hierarchy similar to wolves. This highly social behavior is not observed in any other bird of prey species and is very adaptable to falconry. This genus is native to the Americas from southern Texas and Arizona to northern South America. The Harris Hawk is often used in the modern technique of car hawking (aka drive-by falconry), where the raptor is launched from the window of a moving car at suitable prey.



Falconer with Harris' Hawk

Soaring hawks and the Common Buzzard (*Buteo*)

The genus *Buteo*, known as "hawks" in North America and not to be confused with vultures, has worldwide distribution but is particularly well represented in North America. The Red-tailed Hawk, Ferruginous Hawk, and rarely, the Red-shouldered Hawk are all examples of species from this genus that are used in falconry today. The Red-tailed Hawk is hardy and versatile, taking rabbits, hares, and squirrels; given the right conditions it can catch geese, ducks, pheasants, and even wild turkeys. The Red-Tailed Hawk is also considered a good bird for beginners. The Eurasian or Common Buzzard is also used, although this species requires more perseverance if rabbits are to be hunted.

True hawks (*Accipiter*)

The genus *Accipiter* is also found worldwide. The hawk expert Mike McDermott once said, "The attack of the accipiters is extremely swift, rapid and violent in every way." They are well known in falconry use both in Europe and North America. The Northern Goshawk has been trained for falconry for hundreds of years, taking a variety of birds and mammals. Other popular *Accipiters* used in falconry include: the Cooper's Hawk and Sharp-shinned Hawk in North America and the European Sparrowhawk in Europe and Eurasia.

Falcons (*Falco*)

The genus *Falco* is found worldwide and has occupied a central niche in ancient and modern falconry. Most falcon species used in falconry are specialized predators, most adapted to capturing bird prey such as the Peregrine Falcon and Merlin. A notable exception is the use of desert falcons such the Saker Falcon in ancient and modern Middle Eastern and Asian falconry, where hares were and are commonly taken. In North America, the Prairie Falcon and the Gyrfalcon can capture small mammal prey (as well as gamebirds and waterfowl) in falconry, but this is rarely practiced. Young falconers often begin practicing the art with American Kestrels, the smallest of the falcons in North America; there is debate on whether this practice should continue.^[14] Small species, such as kestrels, merlins and hobbys can also be used for recreational bug hawking - that is, hunting large flying insects such as dragonflies and moths.



A Peregrine falcon with its lure

Booted eagles (*Aquila*)



Eagle huntsman in Karakol, Kyrgyzstan

The *Aquila* (all have "booted" or feathered tarsus) genus has a nearly worldwide distribution. The more powerful types are used in falconry; for example Golden Eagles have reportedly been used to hunt wolves^[15] in Kazakhstan, and are now used by the Kazakh eagle hunters to hunt foxes and other large prey, as they are in neighbouring Kyrgyzstan.^[16] Most are primarily ground-oriented but will occasionally take birds. Eagles are not used as widely in falconry as other birds of prey, due to the lack of versatility in the larger species (they primarily hunt over large open ground), the greater potential danger to other people if hunted in a widely populated area, and the difficulty of training and managing an eagle.

Owls (*Strigidae*)

Owls are not closely related to hawks or falcons. There is little written in classic falconry that discusses the use of Owls in falconry. However, there are at least two species that have successfully been used, the Eurasian Eagle Owl and the Great Horned Owl. Successful training of owls is much different from the training of hawks and falcons, as they are hearing- rather than sight-oriented (owls can only see black and white, and are long-sighted). This often leads falconers to believe that they are less intelligent, as they are distracted easily by new or unnatural noises and they do not respond as readily to food cues. However, if trained successfully, owls show intelligence on the same level as that of hawks and falcons.

Osprey (*Pandion*)

The Osprey is a medium-large bird with a worldwide distribution that specializes in eating fish. Generally speaking, it does not lend itself to falconry. However, the possibility of using a falcon to catch fish remains intriguing. (Some references to "ospreys" in old records mean a mechanical fish-catching device and not the bird.)

Sea eagles (*Haliaëtus*)

Most species of genus *Haliaëtus* catch and eat fish, some almost exclusively. However, in countries where they are not protected, some have been effectively used in hunting for ground quarry.

Species for beginners

In North America only the American Kestrel and the Red-tailed Hawk are permitted for a beginner falconer during his/her apprenticeship, except in Alaska, where the Northern Goshawk is allowed as it is much more abundant there than the Red-tailed Hawk. Opinions differ on the usefulness of the Kestrel for beginners due to its inherent fragility. In the UK, beginner falconers are often permitted to acquire a larger variety of birds, but the Harris Hawk and Red-tailed Hawk remain the most commonly used for beginners and experienced falconers alike.^[17] The Red-tailed Hawk is held in high regard in the UK due to the ease of breeding them in captivity, their inherent hardiness, and their capability hunting the rabbits and hares commonly found throughout the countryside in the UK. Many falconers in the UK and North America switch to accipiters or large falcons following their introduction with easier birds. In the USA accipiters, several types of buteos, and large falcons are only allowed to be owned by falconers who hold a general license. There are three kinds of falconry licenses in the United States, typically Apprentice class, General class, and Master class.

Husbandry, training, and equipment

Imping

Imping is replacing a bird's broken flight feather with the same part of a moulted feather.

Falconry around the world

Falconry is currently practiced in many countries around the world. The falconer's traditional choice of bird is the Northern Goshawk and Peregrine Falcon. In contemporary falconry in both North America and the UK they remain popular, although the Harris Hawk and Red-tailed Hawk are likely more widely used. The Northern Goshawk and the Golden Eagle are more commonly used in Eastern Europe than elsewhere. In the Middle East, the Saker Falcon is the most traditional species flown against the Houbara Bustard, Sandgrouse, Stone-curlew, Hares, and other birds. Peregrines and other captively bred imported falcons are also commonplace. Falconry remains an important part of the Arab heritage and culture. The UAE reportedly spends over 27 million dollars annually towards the protection and conservation of wild falcons, and has set up several state-of-the-art falcon hospitals in Abu Dhabi and Dubai.^[18] The Abu Dhabi Falcon Hospital is the



A Brown Falcon used for falconry in Tasmania



The Shaw Monument, a falconry observation tower in Scotland.

largest falcon hospital in the whole world. There are two breeding farms in the Emirates, as well as those in Qatar and Saudi Arabia. Every year, falcon beauty contests and demonstrations take place at the ADIHEX exhibition in Abu Dhabi.

[19]

Sparrowhawks were formerly used to take a range of small birds, but are really too delicate for serious falconry and have fallen out of favour now that American species are available.

In North America and the UK, falcons usually fly only after birds. Large falcons are typically trained to fly in the "waiting-on" style, where the falcon climbs and circles above the falconer and/or dog and the quarry is flushed when the falcon is in the desired commanding position. Classical game hawking in the UK saw a brace of peregrine falcons flown against the red grouse, or merlins in "ringing" flights after skylarks. Rooks and crows are classic game for the larger falcons, and the magpie, making up in cunning what it lacks in flying ability, is another common target. Short-wings can be flown in both open and wooded country against a variety of bird and small mammal prey. Most hunting with large falcons requires large open tracts where the falcon is afforded opportunity to strike or seize its quarry before it reaches cover. Most of Europe practices similar styles of falconry, but with differing degrees of regulation.

Medieval falconers often rode horses but this is now rare with the exception of contemporary Kazakh and Mongolian falconry. In Kazakhstan, Kyrgyzstan, and Mongolia, the golden eagle is traditionally flown (often from horseback), hunting game as large as foxes and wolves.^[20]

South Korea allows a tiny number of people (a national total of 4 in 2005) to own raptors and practice falconry as a cultural asset.



A Saker Falcon used for falconry in Qatar

In Japan, the Northern Goshawk has been used for centuries. Japan continues to honor its strong historical links with falconry (Takagari) while adopting some modern techniques and technologies.

In Australia, although falconry is not specifically illegal, it is illegal to keep any type of bird of prey in captivity without the appropriate permits. The only exemption is when the birds are kept for purposes of rehabilitation (for which a licence must still be held), and in such circumstances it may be possible for a competent falconer to teach a bird to hunt and kill wild quarry, as part of its regime of rehabilitation to good health and a fit state to be released into the wild.

In New Zealand, falconry was formally legalised for one species only, the Swamp/Australasian harrier (*Circus approximans*) in 2011. This was only possible with over 25 years of effort from both Wingspan National Bird of Prey Centre^[21] and The Raptor Association of New Zealand (RANZ).^[22] Falconry can only be practiced by people who have been issued a falconry permit by the Department of Conservation. There are currently only four practicing falconers in New Zealand.

South Africa has about 180 active falconers.^[23]

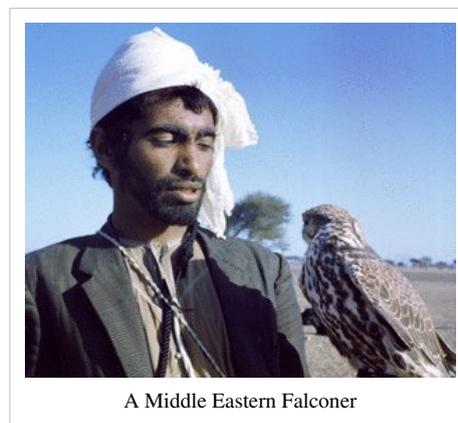
Tangent aspects, such as bird abatement and raptor rehabilitation also employ falconry techniques to accomplish their goals, but are not falconry in the proper sense of the word.

Clubs and organizations

In the UK, the British Falconers' Club is the oldest and largest of the falconry clubs. Working closely with the Hawk Board, an advisory body representing the interests of UK bird of prey keepers, the BFC is in the forefront of raptor conservation, falconer education, and sustainable falconry. Established in 1927, the BFC now has a membership of over 1,200 falconers. It began as a small and elite club, however it is now a sizeable democratic organisation that has members from all walks of life flying hawks, falcons, and eagles at legal quarry throughout the British Isles.

The North American Falconers' Association^[24] (NAFA), founded in 1961, is the premier club for falconry in the US, Canada, and Mexico, and has members worldwide. NAFA is the primary club in the United States and has a membership from around the world. NAFEX is the primary falconry forum for the United States and North America. Most USA states have their own falconry clubs. Although these clubs are primarily social, they also serve to represent falconers within the state in regards to that state's wildlife regulations.

The IAF - International Association for Falconry and Conservation of Birds of Prey,^[25] founded in 1968, is currently representing 75 falconry clubs and conservation organisations from 50 countries worldwide totaling over 30,000 members.



Captive breeding and conservation

The successful and now widespread captive breeding of birds of prey began as a response to dwindling wild populations due to persistent toxins such as PCBs and DDT, systematic persecution as undesirable predators, habitat loss, and the resulting limited availability of popular species for falconry, particularly the peregrine falcon. The first known raptors to breed in captivity belonged to a German falconer named Renz Waller. In 1942–1943, he produced two young peregrines in Düsseldorf in Germany.

The first successful captive breeding of peregrine falcons in North America occurred in the early 1970s by The Peregrine Fund, Professor and falconer Heinz Meng, and other private falconer/breeders such as David Jamieson and Les Boyd who bred the first peregrines by means of artificial insemination. In Great Britain, falconer Phillip Glasier of the Falconry Centre in Newent, Gloucestershire, was successful in obtaining young from more than 20 species of captive raptors. A cooperative effort began between various government agencies, non-government organizations, and falconers to supplement various wild raptor populations in peril. This effort was strongest in North America where significant private donations along with funding allocations through the Endangered Species Act of 1972 provided the means to continue the release of captive-bred Peregrines, Golden Eagles, Bald Eagles, Aplomado Falcons and others. By the mid-1980s, falconers had become self-sufficient as regards sources of birds to train and fly, in addition to the immensely important conservation benefits conferred by captive breeding.

Between 1972 and 2001, nearly all Peregrines used for falconry in the U.S. were captive-bred from the progeny of falcons taken before the U. S. Endangered Species Act was enacted and from those few infusions of wild genes available from Canada and special circumstances. Peregrine Falcons were removed from the United States' endangered species list on August 25th, 1999.^[26] Finally, after years of close work with the US Fish and Wildlife Service, a limited take of wild Peregrines was allowed in 2001, the first wild Peregrines taken specifically for falconry in over 30 years.

Some controversy has existed over the origins of captive breeding stock used by The Peregrine Fund in the recovery of peregrine falcons throughout the contiguous United States. Several peregrine subspecies were included in the breeding stock, including birds of Eurasian origin. Due to the extirpation of the Eastern *anatum* (*Falco peregrinus anatum*), the near extirpation of the *anatum* in the Midwest, and the limited gene pool within North American breeding stock, the inclusion of non-native subspecies was justified to optimize the genetic diversity found within the species as a whole.^[27] Such strategies are common in endangered species re-introduction scenarios, where dramatic population declines result in a genetic bottleneck and the loss of genetic diversity.

Laws regulating the capture and import/export of wild falcons throughout the Middle East and Asia vary, and the effective enforcement of existing national and international regulations are lacking in some regions. The proliferation of captive-bred falcons into the falcon markets of the Arabian Peninsula has likely moderated this demand for wild falcons.

Hybrid falcons

The species within the genus *Falco* are closely related and some pairings produce viable offspring. The heavy northern Gyrfalcon and Asiatic Saker being especially closely related, and it is not known whether the Altai Falcon is a subspecies of the Saker or descendants of naturally occurring hybrids. Peregrine and prairie falcons have been observed breeding in the wild and have produced offspring.^[28] These pairings are thought to be rare, however extra-pair copulations between closely related species may occur more frequently and/or account for most natural occurring hybridization. Some male first generation hybrids may have viable sperm, whereas very few first generation female hybrids lay fertile eggs. Because of these factors, naturally occurring hybridization is thought to be somewhat insignificant to gene flow in raptor species.

The first hybrid falcons produced in captivity occurred in western Ireland when veteran falconer Ronald Stevens and the Hon. John Morris put a male saker and a female peregrine into the same moulting mews for the spring and early

summer, and the two mated and produced offspring.

Captively bred hybrid falcons have been available since the late 1970s, and enjoyed a meteoric rise in popularity in North America and the UK in the 1990s. Hybrids were initially "created" to combine the horizontal speed and size of the gyrfalcon with the good disposition and aerial ability of the peregrine. Hybrid falcons first gained large popularity throughout the Arabian Peninsula, feeding a demand for particularly large and aggressive female falcons capable and willing to take on the very large Houbara Bustard, the classic falconry quarry in the deserts of the Middle East. These falcons were also very popular with Arab falconers as they tended to withstand a respiratory disease (*aspergillosis* from the mold strain *aspergillus*) in stressful desert conditions better than other pure species from the northern hemisphere.

Artificial selection and domestication

Some believe that no species of raptor have been in captivity long enough to have undergone successful selective breeding for desired traits. Captive breeding of raptors over several generations tends to result, either deliberately, or inevitably as a result of captivity, in selection for certain traits, including:

- Ability to survive in captivity.
- Ability to breed in captivity.
- (In most cases) suitability for interactions with humans for falconry. Birds which demonstrated an unwillingness to hunt with men were most often discarded, rather than being placed in breeding projects.
- With gyrfalcons in areas away from their natural Arctic tundra habitat, better disease resistance.
- With gyrfalcons, feather color [29].

Escaped falconry birds

Falconers' birds are inevitably lost on occasion, though most are found again. The main reason birds can be found again is because, during free flights, birds usually wear radio transmitters or bells. The transmitters are in the middle of the tail, on the back, or attached to the bird's legs.

Records of species becoming established in Britain after escaping or being released include:

- Escaped Harris hawks reportedly breed in the wild in Britain.
 - The return of the Goshawk as a breeding bird to Britain since 1945 is due in large part to falconers' escapes: the earlier British population was wiped out by gamekeepers and egg collectors in the late 19th and early 20th centuries.
 - A pair of European Eagle Owls bred in the wild in Yorkshire for several years, feeding largely or entirely on rabbits. The pair are most likely captive escapees. It is not yet known if this will lead to a population becoming established.
 - In 1986, a lost captive-bred female prairie falcon (which had been cross-fostered by an adult peregrine in captivity) mated with a wild male peregrine in Utah. The prairie falcon was trapped and the eggs removed, incubated, hatched and the hybrid offspring were given to falconers. The wild peregrine paired with another peregrine the next year.
 - Falconry in Hawaii is prohibited largely due to the fears of escaped non-native birds of prey becoming established on the island chain and aggravating an already rampant problem of invasive species impacts on native wildlife and plant communities.
-

Regulations in Great Britain

In sharp contrast to the US, falconry in Great Britain is permitted without a special license. However, a restriction exists of using only captive-bred birds. In the lengthy, record-breaking debates in Westminster during the passage of the 1981 Wildlife & Countryside Bill, efforts were made by the Royal Society for the Protection of Birds and other lobby groups to have falconry outlawed, but these were successfully resisted. After a centuries-old but informal existence in Britain, the sport of falconry was finally given formal legal status in Great Britain by the Wildlife and Countryside Act 1981, which allowed it to continue provided all captive raptors native to the UK were officially ringed and government-registered. DNA-testing was also available to verify birds' origins. Since 1982 the British government's licensing requirements have been overseen by the Chief Wildlife Act Inspector for Great Britain, who is assisted by a panel of unpaid assistant inspectors.

British falconers are entirely reliant upon captive-bred birds for their sport. The taking of raptors from the wild for falconry, although permitted by law under government licence, has not been allowed in recent decades.

Anyone is permitted to possess legally registered or captive-bred raptors, although falconers are anxious to point out that this is not synonymous with falconry, which specifically entails the hunting of live quarry with a trained bird. A raptor kept merely as a pet or possession, although the law may allow it, is not considered to be a falconer's bird. Birds may be used for breeding or kept after their hunting days are over, but falconers believe it is preferable that young, fit birds are flown at quarry.

Regulations in the U.S

In the United States, falconry is legal in all states except Hawaii. It is also illegal in the District of Columbia. A falconer must have state and federal licenses to practice the sport. Acquiring a falconry license in the US requires an aspiring falconer to pass a written test, have equipment and facilities inspected, and serve a minimum of two years as an apprentice under a licensed falconer. There are three classes of the falconry license, which is a permit issued jointly by the falconer's state of residence and the federal government. The aforementioned Apprentice license matriculates to a General Class license, which allows the falconer to possess no more than two raptors at a time. After a minimum of 5 years at General level, falconers may apply for a Master Class license, which allows them to keep 3 raptors for falconry.

Within the U.S., a state's regulations may be more, but not less, restrictive than the federal guidelines. Both state and federal regulations (as well as state hunting laws) must be complied with by the falconer. Most states afford falconers an extended hunting season relative to seasons for archery and firearms, however species to be hunted, bag limits, and possession limits remain the same for both. No extended seasons for falconry exist for the hunting of migratory birds such as waterfowl and doves.

Federal regulation of falconry in North America is enforced under the statutes of the Migratory Bird Treaty Act of 1918 (MBTA), originally designed to address the rampant commercial market hunting of migratory waterbirds during the early 20th century. Birds of prey suffered extreme persecution from the early 1900s through the 1960s, where thousands of birds were shot at conspicuous migration sites and many state wildlife agencies issued bounties for carcasses.^[30] Due to widespread persecution and further impacts to raptor populations from DDT and other toxins, the act was amended in 1972 to include birds of prey (eagles are also protected under the Bald and Golden Eagle Protection Act of 1959). Under the MBTA, it is illegal for people to "take" migratory birds, their eggs, feathers or nests. Take is defined in the MBTA to "include by any means or in any manner, any attempt at hunting, pursuing,



A White Gyrfalcon

wounding, killing, possessing or transporting any migratory bird, nest, egg, or part thereof".^[31] Falconers are allowed to trap, and otherwise possess certain birds of prey and their feathers with special permits issued by the Migratory Bird Office of the U.S. Fish and Wildlife Service and by state wildlife agencies (issuers of trapping permits).

The Convention on International Trade on Endangered Species of Wild Flora and Fauna (CITES) restricts the import and export of most native birds species and are listed in the CITES Appendix I, II, & III.

The Wild Bird Conservation Act (WBCA), legislation put into effect circa 1993, regulates importation of any CITES-listed birds into the United States.

Some controversy exists over the issue of falconer's ownership of captive bred birds of prey. Falconry permits are issued by the U.S. Fish & Wildlife Service in a manner that entrusts falconers to "take" (trap) and possess permitted birds and use them only for permitted activities, but does not transfer legal ownership. No legal distinction is made between native wild trapped vs. captive bred birds of the same species. This legal position is designed to disincentivize the commercial exploitation of native wildlife.

Falconry today

Falcons can live into their mid teens, with larger hawks living longer and eagles likely to see out middle-aged owners. Through the captive breeding of rescued birds, the last 30 years have seen a great rebirth of the sport, with a host of innovations; falconry's popularity, through lure flying displays at country houses and game fairs, has probably never been higher in the past 300 years. Ornithologist Tim Gallagher, editor of the Cornell Lab of Ornithology's *Living Bird* magazine, documented his experiences with modern falconry in a 2008 book, *Falcon Fever*.^[32]

Making use of the natural relationship between raptors and their prey, today, falconry is used to control pest birds and animals in urban areas, landfills, commercial buildings, and airports. Falconer Dan Frankian of Hawkeye Bird and Animal Control frequently speaks on the subject to news crews while his hawks and falcons are flying over Toronto City Hall, in an effort to control the city's gull and pigeon population.

Falconry Centres or Birds of Prey Centres house these raptors. They are responsible for many aspects of Bird of Prey Conservation (through keeping the birds for education and breeding). Many conduct regular flying demonstrations and educational talks, and are popular with visitors worldwide.

Such centres may also provide Falconry Courses, Hawk Walks, Displays and other experiences with these raptors.



Falconry

Literature and film

- In the ninth novel of the fifth day of Giovanni Boccaccio's *The Decameron*, a medieval collection of novellas, a falcon is central to the plot: The nobleman Federigo degli Alberighi has wasted his fortune courting his unrequited love until nothing is left but his brave falcon. When his lady come to see him he gives her the falcon to eat. Knowing his case she changes her mind, marries him and makes him rich.
- The seventeenth century English physician-philosopher Sir Thomas Browne wrote a short essay on Falconry.^[33]
- T.H. White was a falconer and wrote *The Goshawk* about his attempt to train a hawk in the traditional art of falconry. Falconry is also featured and discussed in *The Once and Future King*.
- In Virginia Henley's historical romance books, "The Falcon and the Flower", "The Dragon and the Jewel", "The Marriage Prize", "The Border Hostage" and "Infamous", there are numerous mentions to the art of falconry, as these books are set at dates ranging from the 1150s to the 16th century.
- The main character, Sam Gribbley, in the children's novel "My Side of the Mountain" is a falconer. His trained falcon is named Frightful.
- Stana Katic, the Canadian actress who plays Detective Kate Beckett on *Castle*, enjoys falconry in her spare time.^[34] She has said that, "It gives me self-respect."
- In the book and movie *The Falcon and the Snowman* about two Americans who sold secrets to the Soviets, one of the two main characters, Christopher Boyce, is a falconer.
- In *The Royal Tenenbaums*, Richie keeps a falcon named Mordecai on the roof of his home in Brooklyn.
- In James Clavell's *Shogun*, Toranaga, one of the main characters, practices falconry throughout the book, often during or immediately before or after important plot events. His thoughts also reveal analogy between his falconry and his use of other characters towards his ends.
- The 1985 film *Ladyhawke* involved a medieval warrior who carried a red tail hawk as a pet, but in truth, the hawk was actually his lover who had been cursed by an evil bishop to keep the two apart.
- In *The Dark Tower* series, the main character, Roland, uses a hawk named David, to win a trial by combat in order to become a Gunslinger.
- "The Falconer" is a recurring sketch on *Saturday Night Live*, featuring Will Forte as a falconer who constantly finds himself in mortal peril and must rely on his loyal falcon, Donald, to rescue him.
- Gabriel García Márquez's novel *Chronicle of a Death Foretold*'s main character, Santiago Nasar, and his father are falconers.
- Hodgesaargh is a falconer based in Lancre Castle in Terry Pratchett's *Discworld* book. He is an expert and dedicated falconer who unluckily seems to only keep birds that enjoy attacking him.
- Fantasy author Mercedes Lackey is a falconer and often adds birds of prey to her novels. Among the Tayledras or Hawkbrother race in her *Chronicles of Valdemar*, everyone bonds with a specially bred raptor called a bondbird which has limited powers of speech mind-to-mind and can scout and hunt for its human bondmate.
- Crime novelist Andy Straka is a falconer and his Frank Pavlicek private eye series features a former NYPD homicide detective and falconer as protagonist. The books include *A Witness Above*, *A Killing Sky*, *Cold Quarry* (2001, 2002, 2003), and *Kitty Hitter* (2009).
- In Irish poet William Butler Yeats's poem, *The Second Coming*, Yeats uses the image of, "The falcon cannot hear the falconer" as a metaphor for social disintegration.
- American Poet Robert Duncan's poem, "My Mother Would Be a Falconress"^[35]
- The comic book *Gold Ring* by Qais M. Sedki and Akira Himekawa features falconers and falcons.
- C. J. Box's Joe Pickett series of novels has a recurring character, Nate Romanowski, who is a falconer.

English language words and idioms derived from falconry

These English language words and idioms are derived from falconry:

Expression	Meaning in falconry	Derived meaning
in a bate	bating: trying to fly off when tethered	in a panic
with bated breath	bated: tethered, unable to fly free	restrained and focused by expectation
fed up	of a hawk, with its crop full and so not wanting to hunt	no longer interested in something
Hawked it up	The sound of a hawk expelling the indigestible parts of a meal	Clearing phlegm from the throat
haggard	of a hawk, caught from the wild when adult	looking exhausted and unwell, in poor condition; wild or untamed
under his/her thumb	of the hawk's leash when secured to the fist	tightly under control
wrapped round his/her little finger	of the hawk's leash when secured to the fist	tightly under control
lure ^[36]	Originally a device used to recall hawks. The hawks, when young, were trained to associate the device (usually a bunch of feathers) with food.	To tempt with a promise/reward/bait
rouse ^[37]	To shake one's feathers	Stir or awaken
pounce ^[38]	Referring to a hawk's claws, later derived to refer to birds springing or swooping to catch prey	Jump forward to seize or attack something
to turn tail ^[39]	Fly away	To turn and run away

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- [32] At the moment there are about 5,000 falconers around the United states.

[33] <http://penelope.uchicago.edu/misctracts/hawks.html>

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Further reading

- Modern Apprentice (<http://www.themodernapprentice.com>): Site for North Americans interested in falconry by Lydia Ash. (Much information for this entry was due to her research)
- Beatriz E. Candil García, Arjen E.Hartman, *Ars Accipitraria: An Essential Dictionary for the Practice of Falconry and hawking*"; Yarak Publishing, London, 2007, ISBN 978-0-9555607-0-5 (The excerpt on the language of falconry comes from this book)
- Beatriz E. Candil García, *The Red-tailed Hawk: The Great Unknown* Yarak London, 2008, ISBN 978-0-9555607-4-3
- F.L. Beebe, H.M. Webster, *North American Falconry and Hunting Hawks*; 8th edition, 2000, ISBN 0-685-66290-X,

External links

- Falconry Articles (<http://www.falconryarticles.com>)
 - International Falconry Forum .com (<http://www.internationalfalconryforum.com>)
 - Falconry Forum (<http://www.falconryforum.co.uk>)
 - Falconry (<http://www.dmoz.org/Recreation/Outdoors/Hunting/Falconry/>) at the Open Directory Project
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Falcon

Falcon



Brown Falcon (*Falco berigora*)

Scientific classification

Kingdom:	Animalia
Phylum:	Chordata
Class:	Aves
Order:	Falconiformes
Family:	Falconidae
Subfamily:	Falconinae
Genus:	<i>Falco</i> Linnaeus, 1758

Species

About 37; see text.

Synonyms

- *Aesalon*
- *Lithofalco*
- *Tinnunculus* Linnaeus, 1766
- *Hierofalco* Cuvier, 1817
- *Cerchneis* Boie, 1826
- *Hypotriorchis* Boie, 1826
- *Rhynchodon* Nitzsch, 1829
- *Ieracidea* Gould, 1838
- *Hieracidea* Strickland, 1841 (unjustified emendation)Wikipedia:Verifiability
- *Gennaia* Kaup, 1847
- *Jerafalco* Kaup, 1850 (unjustified emendation)
- *Harpe* Bonaparte, 1855 (*non* Lacepède 1802Wikipedia:Verifiability: preoccupied)
- *Dissodectes* Sclater, 1864
- *Genaie* Heuglin, 1867 (unjustified emendation)Wikipedia:Verifiability
- *Harpa* Sharpe, 1874 (*non* Pallas 1774: preoccupied)

- *Gennadas* Heine & Reichenow, 1890Wikipedia:Verifiability (unjustified emendation)Wikipedia:Verifiability
- *Nesierax* Oberholser, 1899
- *Nesihierax* Dubois, 1902 (unjustified emendation)
- *Asturaetus* De Vis, 1906 (non *Asturaetos* Brehm 1855: preoccupied)
- *Plioetus* Richmond, 1908
- *Sushkinia* Tugarinov, 1935 (non Martynov 1930: preoccupied) – see below

A **falcon** (/ˈfɔːlkən/ or /ˈfælkən/) is any species of raptor in the genus *Falco*. The genus contains 37 species, widely distributed throughout Europe, Asia, Africa, Australasia and North America.

Adult falcons have thin tapered wings, which enable them to fly at high speed and to change direction rapidly. Fledgling falcons, in their first year of flying, have longer flight feathers, which makes their configuration more like that of a general-purpose bird such as a broadwing. This makes it easier to fly while learning the exceptional skills required to be effective hunters as adults.

Peregrine Falcons have been recorded diving at speeds of 200 miles per hour (320 km/h), making them the fastest-moving creatures on Earth.^[1] Other falcons include the Gyrfalcon, Lanner Falcon, and the Merlin. Some small falcons with long narrow wings are called hobbies, and some which hover while hunting are called kestrels. The falcons are part of the family Falconidae, which also includes the caracaras, Laughing Falcon, forest falcons, and falconets.

The traditional term for a male falcon is *tercel* (British spelling) or *tiercel* (American spelling), from Latin *tertius* = third because of the belief that only one in three eggs hatched a male bird. Some sources give the etymology as deriving from the fact that a male falcon is approximately one third smaller than the female^{[2][3][4]} (Old French *tiercelet*). A falcon chick, especially one reared for falconry, that is still in its downy stage is known as an *eyas* ^{[5][6]} (sometimes spelt *eyass*). The word arose by mistaken division of Old French *un niais*, from Latin presumed *nidiscus* ("nestling", from *nidus* = nest). The technique of hunting with trained captive birds of prey is known as falconry.

As is the case with many birds of prey, falcons have exceptional powers of vision; the visual acuity of one species has been measured at 2.6 times that of a normal human.^[1]

In February 2005, the Canadian ornithologist Louis Lefebvre announced a method of measuring avian intelligence in terms of a bird's innovation in feeding habits. The falcon and corvids scored highest on this scale.^[7]

Systematics and evolution

Compared to other birds of prey, the fossil record of the falcons is not well distributed in time. The oldest fossils tentatively assigned to this genus are from the Late Miocene, less than 10 million years ago. This coincides with a period in which many modern genera of birds became recognizable in the fossil record. The falcon lineage may, however, be somewhat older than this and given the distribution of fossil and living *Falco* taxa is probably of North American, African or possibly Middle Eastern or European in origin.

Overview

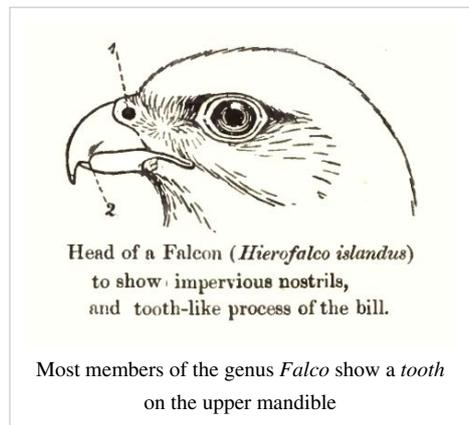
Falcons are roughly divisible into three or four groups. The first contains the kestrels (probably excepting the American Kestrel),^[1] usually small and stocky falcons of mainly brown upperside color and sometimes sexually dimorphic; three African species that are generally grey in color stand apart from the typical members of this group. Kestrels feed chiefly on terrestrial vertebrates and invertebrates of appropriate size, such as rodents, reptiles, or insects.

The second group contains slightly larger (on average) and more elegant species, the hobbies and relatives. These birds are characterized by considerable amounts of dark slate-grey in their plumage; the malar area is nearly always black. They feed mainly on smaller birds.

Third are the Peregrine Falcon and its relatives: variably sized powerful birds that also have a black malar area (except some very light color morphs), and often a black cap as well. Otherwise, they are somewhat intermediate between the other groups, being chiefly medium grey with some lighter or brownish colors on the upper side. They are, on average, more delicately patterned than the hobbies and, if the hierofalcons are excluded (see below), this group typically contains species with horizontal barring on the underside. As opposed to the other groups, where tail color varies much in general but little according to evolutionary relatedness,^[8] the tails of the large falcons are quite uniformly dark grey with rather inconspicuous black banding and small white tips, though this is probably plesiomorphic. These large *Falco* feed on mid-sized birds and terrestrial vertebrates.

Very similar to these, and sometimes included therein, are the four or so species of hierofalcons (literally, "hawk-falcons"). They represent taxa with, usually, more phaeomelanins, which impart reddish or brown colors, and generally more strongly patterned plumage reminiscent of hawks. Notably, their undersides have a lengthwise pattern of blotches, lines or arrowhead marks. While these three or four groups, loosely circumscribed, are an informal arrangement, they probably contain several distinct clades in their entirety. A study of mtDNA cytochrome *b* sequence data of some kestrels^[1] identified a clade containing the Common Kestrel and related "malar-striped" species, to the exclusion of such taxa as the Greater Kestrel (which lacks a malar stripe), the Lesser Kestrel (which is very similar to the Common but also has no malar stripe), and the American Kestrel. The latter species has a malar stripe, but its color pattern—apart from the brownish back—and notably also the black feathers behind the ear, which never occur in the true kestrels, are more reminiscent of some hobbies. The malar-striped kestrels apparently split from their relatives in the Gelasian, roughly 2.5-2 mya, and are apparently of tropical East African origin. The entire "true kestrel" group—excluding the American species—is probably a distinct and quite young clade, as also suggested by their numerous apomorphies.

Other studies^{[9][10][11][12][13]} have confirmed that the hierofalcons are a monophyletic group—and, incidentally, that hybridization is quite frequent at least in the larger falcon species. Initial studies of mtDNA cytochrome *b* sequence data suggested that the hierofalcons are basal among living falcons.^{[9][10]} This is now known to be an erroneous result due to the presence of a numt;^[11] in reality, the hierofalcons are a rather young group, originating maybe at the same time as the start of the main kestrel radiation, about 2 million years ago. This lineage seems to have almost gone extinct at some point in the past; the present diversity is of very recent origin, though little is known about their fossil history.^[13]



The phylogeny and delimitations of the Peregrine and hobbies groups are more problematic. Molecular studies have only been conducted on a few species, and the morphologically ambiguous taxa have often been little researched. The morphology of the syrinx, which contributes well to resolving the overall phylogeny of the Falconidae,^[14] is not

very informative in the present genus. Nonetheless, a core group containing the Peregrine and Barbary falcons, which, in turn, group with the hierofalcons and the more distant Prairie Falcon (which was sometimes placed with the hierofalcons, even though it is entirely distinct biogeographically), as well as at least most of the "typical" hobbies, are confirmed to be monophyletic as suspected.^{[9][10]}

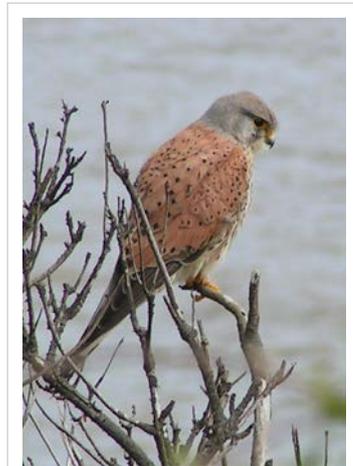
Given that the American *Falcos* of today belong to the Peregrine group, or are apparently more basal species, it seems that the initially most successful evolutionary radiation was a Holarctic one that originated possibly around central Eurasia or in (northern) Africa. One or several lineages were present in North America by the Early Pliocene at latest.

The origin of today's major *Falco* groups—the "typical" hobbies and kestrels for example, or the Peregrine-hierofalcon complex, or the Aplomado Falcon lineage—can be quite confidently placed from the Miocene-Pliocene boundary through the Zanclean and Piacenzian and just into the Gelasian, that is from about 8 to 2.4 million years ago, when the malar-striped kestrels diversified. Some groups of falcons, such as the hierofalcon complex or the Peregrine-Barbary superspecies have only evolved in more recent times; the species of the former seem to be a mere 120,000 years old or so.^[1]

Species

The sequence follows the taxonomic order of White *et al.* (1996),^[13] except for adjustments in the kestrel sequence.

- Malagasy Kestrel, *Falco newtoni*
- Seychelles Kestrel, *Falco araea*
- Mauritius Kestrel, *Falco punctatus*
- Réunion Kestrel, *Falco duboisi* – extinct (c.1700)
- Spotted Kestrel, *Falco moluccensis*
- Nankeen Kestrel or Australian Kestrel, *Falco cenchroides*
- Common Kestrel, *Falco tinnunculus*
 - Rock Kestrel, *Falco (tinnunculus) rupicolus*
- Greater Kestrel, *Falco rupicoloides*
- Fox Kestrel, *Falco alopex*
- Lesser Kestrel, *Falco naumanni*
- Grey Kestrel, *Falco ardosiaceus*
- Dickinson's Kestrel, *Falco dickinsoni*
- Banded Kestrel, *Falco zoniventris*
- Red-necked Falcon, *Falco chicquera*
 - African Red-necked Falcon, *Falco (chicquera) ruficollis*
- Red-footed Falcon, *Falco vespertinus*
- Amur Falcon, *Falco amurensis*
- Eleonora's Falcon, *Falco eleonora*
- Sooty Falcon, *Falco concolor*
- American Kestrel or "Sparrow Hawk", *Falco sparverius*
- Aplomado Falcon, *Falco femoralis*
- Merlin or "Pigeon Hawk", *Falco columbarius*
 - Eurasian Merlin, *Falco (columbarius) aesalon*
- Bat Falcon, *Falco rufigularis*
- Orange-breasted Falcon, *Falco deiroleucus*
- Eurasian Hobby, *Falco subbuteo*



Common Kestrel



New Zealand Falcon

- African Hobby, *Falco cuvierii*
- Oriental Hobby, *Falco severus*
- Australian Hobby or Little Falcon, *Falco longipennis*
- New Zealand Falcon or Kārearea, *Falco novaeseelandiae*
- Brown Falcon, *Falco berigora*
- Grey Falcon, *Falco hypoleucos*
- Black Falcon, *Falco subniger*
- Lanner Falcon, *Falco biarmicus*
- Laggar Falcon, *Falco jugger*
- Saker Falcon, *Falco cherrug*
 - Altai Falcon, *Falco cherrug altaicus* (status unclear)
- Gyrfalcon, *Falco rusticolus*



Saker Falcon, a typical hierofalcon

- Prairie Falcon, *Falco mexicanus*
- Peregrine Falcon, *Falco peregrinus*
 - Peale's Falcon, *Falco peregrinus pealei*
 - Pallid Falcon, *Falco peregrinus cassini* var. *kreyenborgi*
 - Barbary Falcon, *Falco (peregrinus) peleginoides*
- Taita Falcon, *Falco fasciinucha*

Fossil record

- *Falco medius* (Late Miocene of Cherevichnyi, Ukraine)^{[14][15]}
- ?*Falco* sp. (Late Miocene of Idaho)^[16]
- *Falco* sp. (Early^[17] Pliocene of Kansas)^[18]
- *Falco* sp. (Early Pliocene of Bulgaria – Early Pleistocene of Spain and Czechia)^[19]
- *Falco oregonus* (Early/Middle Pliocene of Fossil Lake, Oregon) – possibly not distinct from a living species
- *Falco umanskajae* (Late Pliocene of Kryzhanovka, Ukraine) – includes "Falco odessanus", a *nomen nudum*^[20]
- ?*Falco bakalovi* (Late Pliocene of Varshets, Bulgaria)^[21]
- *Falco antiquus* (Middle Pleistocene of Noailles, France and possibly Horvólggy, Hungary)^{[22][]}
- Cuban Kestrel, *Falco kurochkini* (Late Pleistocene/Holocene of Cuba, West Indies)
- *Falco chowi* (China)

Several more paleosubspecies of extant species also been described; see species accounts for these.

"*Sushkinia*" *plioaena* from the Early Pliocene of Pavlodar (Kazakhstan) appears to be a falcon of some sort. It might belong in this genus or a closely related one.^[] In any case, the genus name *Sushkinia* is invalid for this animal because it had already been allocated to a prehistoric dragonfly relative.

The supposed "*Falco*" *pisanus* was actually a pigeon of the genus *Columba*, possibly the same as *Columba omnisanctorum*, which, in that case, would adopt the older species name of the "falcon".^[15] The Eocene fossil "*Falco*" *falconellus* (or "*F.*" *falconella*) from Wyoming is a bird of uncertain affiliations, maybe a falconid, maybe not; it certainly does not belong in this genus. "*Falco*" *readei* is now considered a paleosubspecies of the Yellow-headed Caracara (*Milvago chimachima*).

Notes

- [1] "The Speed of Animals" in *The New Book of Knowledge*, Grolier Academic Reference, 2003, p. 278, ISBN 071720538X
- [4] "tercel", Oxford Dictionary
- [7] Bird IQ test takes flight (http://www.eurekalert.org/pub_releases/2005-02/nsae-bit021605.php), Science News, AAAS Annual Meeting, 2005.
- [8] For example, tail color in the Common and Lesser Kestrels is absolutely identical, yet they do not seem too closely related (Groombridge *et al.* 2002). On the other hand, the Fox and Greater Kestrels can be told apart at first glance by their tail colors, but not by much else; they might be very close relatives and are probably much closer to each other than the Lesser and Common Kestrels.
- [9] Helbig, A.J.; Seibold, I.; Bednarek, W.; Brüning, H.; Gaucher, P.; Ristow, D.; Scharlau, W.; Schmidl, D. & Wink, Michael (1994): Phylogenetic relationships among falcon species (genus *Falco*) according to DNA sequence variation of the cytochrome b gene (<http://www.uni-heidelberg.de/institute/fak14/ipmb/phazb/pubwink/1994/4.1994.pdf>). In: Meyburg, B.-U. & Chancellor, R.D. (eds.): *Raptor conservation today*: 593–599
- [10] Wink, Michael; Seibold, I.; Lotfikhah, F. & Bednarek, W. (1998): Molecular systematics of holarctic raptors (Order Falconiformes) (<http://www.uni-heidelberg.de/institute/fak14/ipmb/phazb/pubwink/1998/31.1998.pdf>). In: Chancellor, R.D., Meyburg, B.-U. & Ferrero, J.J. (eds.): *Holarctic Birds of Prey*: 29–48. Adenex & WWGBP
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- [12] Wink, Michael; Sauer-Gürth, Hedi; Ellis, David & Kenward, Robert (2004): Phylogenetic relationships in the Hierofalco complex (Saker-, Gyr-, Lanner-, Laggard Falcon) (<http://www.uni-heidelberg.de/institute/fak14/ipmb/phazb/pubwink/2004/27.2004.pdf>). In: Chancellor, R.D. & Meyburg, B.-U. (eds.): *Raptors Worldwide*: 499–504. WWGBP, Berlin
- [13] White, Clayton M.; Olsen, Penny D. & Kiff, Lloyd F. (1994): Family Falconidae. In: del Hoyo, Josep; Elliott, Andrew & Sargatal, Jordi (editors): *Handbook of Birds of the World, Volume 2 (New World Vultures to Guinea-fowl)*: 216–275, plates 24–28. Lynx Edicions, Barcelona. ISBN 84-87334-15-6
- [14] IZAN 45-4033: left carpometacarpus. Small species; possibly closer to kestrels than to peregrine lineage or hierofalcons, but may be more basal altogether due to its age
- [15] Mlíkovský, Jirí (2002): *Cenozoic Birds of the World, Part 1: Europe* (<http://www.nm.cz/download/JML-18-2002-CBE.pdf>). Ninox Press, Prague
- [16] IMNH 27937. A coracoid of a Merlin-sized species. It does not seem close to *F. columbarius* or the Recent North American species (Becker 1987).
- [17] Fox Canyon Local Fauna, 4.3–4.8 million years ago: Martin, R.A.; Honey, J.G. & Pelaez-Campomanes, P. (2000): The Meade Basin Rodent Project; a progress report (http://www.kgs.ku.edu/Publications/OFR/2000/OFR00_61/index.html). Kansas Geological Survey Open-file Report 2000-61. *Paludicola* 3(1): 1–32.
- [18] UMMP V27159, V29107, V57508-V57510, V57513/V57514 some limb bones. Slightly smaller than a Merlin and more robust than American Kestrel, and seems not too distant from *F. columbarius*.
- [19] A hierofalcon (Mlíkovský 2002)? If so, probably not close to the living species, but an earlier divergence that left no descendants; might be more than one species due to large range in time and/or include common ancestor of hierofalcons and Peregrine-Barbary complex (Nittinger *et al.* 2005).
- [20] NNPM NAN 41-646. Almost complete left tarsometatarsus. Probably a prehistoric hobby, perhaps less specialized for bird hunting: Sobolev, D.V. (2003): Новый вид плиоценового сокола (Falconiformes, Falconidae) (<http://www.v-zool.kiev.ua/pdfs/2003/6/11.pdf>) [A new species of Pliocene falcon (Falconiformes, Falconidae)] *Vestnik zoologii* 37 (6): 85–87. [Russian with English abstract]
- [21] Status, especially distinctness from *F. antiquus*, requires confirmation (Mlíkovský 2002).
- [22] Supposedly a Saker Falcon paleosubspecies (Mlíkovský 2002), but this is not too likely due to the probable Eemian origin of that species.

References

External links

- Falconidae videos (<http://ibc.lynxeds.com/family/falcons-caracaras-falconidae>) on the Internet Bird Collection, ibc.lynxeds.com
- The Raptor Resource Project (<http://www.raptorresource.org>) Peregrine, owl, eagle and osprey cams, facts, and other resources, [raptorresource.org](http://www.raptorresource.org)
-  "Falcon". *New International Encyclopedia*. 1905.

Kestrel

Kestrel	
	
Adult male Common Kestrel	
Scientific classification	
Kingdom:	Animalia
Phylum:	Chordata
Class:	Aves
Order:	Falconiformes
Family:	Falconidae
Genus:	<i>Falco</i> (<i>partim</i>)
Species	
See text.	

The name **kestrel**, (from French *crécerelle*, derivative from *crécelle* i.e. Ratchet) is given to several different members of the falcon genus, *Falco*. Kestrels are most easily distinguished by their typical hunting behaviour which is to hover at a height of around 10–20 metres (33–66 ft) over open country and swoop down on prey, usually small mammals, lizards or large insects. Other falcons are more adapted to active hunting on the wing. In addition, kestrels are notable for usually having much brown in their plumage.

Description

Kestrels can hover in stationary air, even indoors in barns. While hovering they face towards any slight headwind,^[1] leading to the Common Kestrel being called a "Windhover" in some areas.

Unusually for falcons, plumage often differs between male and female, although as is usual with monogamous raptors the female is slightly larger than the male. This allows a pair to fill different feeding niches over their home range. Kestrels are bold and have adapted well to human encroachment, nesting in buildings and hunting by major roads. Kestrels do not build their own nests, but use nests built by other species.



A juvenile American Kestrel on the roof of a parked car in downtown Boston

Most species termed kestrels appear to form a distinct clade among the falcons, as suggested by comparison of mtDNA cytochrome *b* sequence data and morphology. This seems to have diverged from other *Falco* around the

Miocene-Pliocene boundary (Messinian to Zanclean, or about 7–3.5 mya). The most basal "true" kestrels are three species from Africa and its surroundings which lack a malar stripe, and in one case have—like other falcons but unlike other true kestrels—large areas of gray in their wings.

Approximately during the Gelasian (Late Pliocene or Early Pleistocene, around 2.5–2 mya), the main lineage of true kestrels emerged; this contains the species characterized by a malar stripe. This too seems to have evolved in Africa and subsequently spread across the Old World until they reached Australia some time during the Middle Pleistocene, less than one million years ago. This group contains several taxa found on Indian Ocean islands. A group of three predominantly gray species from Africa and Madagascar are usually considered kestrels due to their general shape and habits, but are probably distinct from the true kestrels as outlined above.

The American Kestrel is the only New World species termed "kestrel". The molecular data of Groombridge^[1] as well as morphological peculiarities (like grey wings in males and a black ear-spot) and biogeography, strongly support the view that this species, among the *Falco* falcons, is not a kestrel at all in the phylogenetic sense but perhaps closer to the hobbies.

Malar-striped clade or Common Kestrel group

- Malagasy Kestrel, *Falco newtoni*
- Seychelles Kestrel, *Falco araea*
- Mauritius Kestrel, *Falco punctatus*
- Réunion Kestrel, *Falco duboisi* - extinct (c.1700)
- Spotted Kestrel, *Falco moluccensis*, found in Indonesia
- Nankeen Kestrel or **Australian Kestrel**, *Falco cenchroides*, found in Australia and New Guinea
- Common Kestrel, *Falco tinnunculus*, found in Europe, Asia, and Africa
 - Rock Kestrel, *Falco tinnunculus rupicolus*, a subspecies of the Common Kestrel, found in South Africa

Basal lineage(s) of true kestrels

- Greater Kestrel, *Falco rupicoloides*, found in Eastern to South Africa
- Fox Kestrel, *Falco alopex*, found in Equatorial Africa
- Lesser Kestrel, *Falco naumanni*, found in southern Europe, India, and most of Africa except for the Sahara and equatorial forest areas

African gray kestrels (a more distant group)

- Grey Kestrel, *Falco ardosiaceus*, found in Central to Southern Africa
- Dickinson's Kestrel, *Falco dickinsoni*, found in Eastern to Southern Africa
- Banded Kestrel, *Falco zoniventris*, found on Madagascar

American Kestrel

- American Kestrel, *Falco sparverius*, found in North America and South America

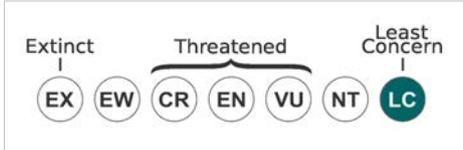
References

- [1] The Hovering Of The Kestrel - an essay by Richard Jefferies (<http://www.readbookonline.net/readOnLine/23540/>)

External links

- Identification guide (PDF) by Javier Blasco-Zumeta (http://www.ibercajalav.net/img/131_KestrelFtinnunculus.pdf)
- Live stream & recordings of the Kestrel family by Aleš Nohel (<http://www.ustream.tv/channel/falcon-s-nest>)

Malagasy Kestrel

Malagasy Kestrel	
	
Conservation status	
	
Least Concern (IUCN 3.1) ^[1]	
Scientific classification	
Kingdom:	Animalia
Phylum:	Chordata
Class:	Aves
Order:	Falconiformes
Family:	Falconidae
Genus:	<i>Falco</i>
Species:	<i>F. newtoni</i>
Binomial name	
<i>Falco newtoni</i> Gurney, 1863	
Subspecies	
<ul style="list-style-type: none"> • <i>Falco newtoni newtoni</i> Gurney, 1863 • <i>Falco newtoni aldabranus</i> Grote, 1928 	

The **Malagasy Kestrel** (*Falco newtoni*), also known as the **Madagascar Kestrel**, **Malagasy Spotted Kestrel**, **Newton's Kestrel**, **Madagascar Spotted Kestrel**, katiti (*Creole*)^[2] or hitsikitsika (*Malagasy*), is a small bird of prey of the genus *Falco*. It is named after British ornithologist Edward Newton. It occurs in two subspecies on Madagascar and at Aldabra. The race from Aldabra is also called 'Aldabra Kestrel' (*Falco newtoni aldabranus*). Its closest living relative is the Seychelles Kestrel; they were at one time considered conspecific. Their common ancestors appear to have diverged very recently, probably less than 1 million years ago during the Early or Middle Pleistocene. The Mauritius Kestrel is more distantly related. (Groombridge *et al.* 2002)

Description

It can reach a size of 30 cm. The wings are 180 mm to 195 mm at the males and 188 mm to 203 mm at the females. The males can reach a weight between 112 and 118 grams. The weight of the females is up to 128 grams. The head and the nape of the males is rufous grey with dark streaks. A dark moustachial streak running from the basis of the bill backwards to sides of the throat. The upperparts and the wingcoverts are chestnut with black spots. The uppertail coverts are grey with blackish spots. The long flight feathers are blackish brown, the inner webs are covered with white and chestnut spots. The underparts are whitish. The short flight feathers are chestnut coloured and dark banded. The chest, belly and underwing coverts are covered with black spots. The tail is grey coloured. It has six to seven narrow black bars and a broad subterminal bar. All feathers have white tips. In addition there is a rufous phase. At this morph the head and nape are almost black. Body and underwing coverts are dark chestnut brown with black streaks and spots. The throat exhibits a buffish-white hue. The underwing coverts are greyish white and spotted black. The head of the females is stronger chestnut coloured. The underparts are more spotted and the tail is brown with black bars. Both sexes exhibits a slate grey bill with a black tip. The cere is yellow. The legs are either yellow or bright orange (rufous morph). The juveniles are similar coloured as the females.

Aldabra Kestrel

The Aldabra Kestrel looks similar to the Malagasy Kestrel but it is slightly smaller. The wings are 170 mm to 183 mm at the males and 177 mm to 186 mm at the females. Some females exhibit entirely white underparts.

Distribution and habitat

The Malagasy Kestrel has a large range of occurrence and it is native to Madagascar, Mayotte, and the Comores. It is a breeding resident on Madagascar where it occurs in savannas and wetlands but also artificial landscapes in the vicinity of human settlements in altitudes from 0 to 2000 asl. It is uncommon in forests. The habitat of the Aldabra Kestrel is the Aldabran Island of Grande Terre but there is also an evidence for the island of Anjouan at the Comores.

Reproduction

The Malagasy Kestrel usually nests on rock ledges, in buildings, in tree holes, or in the stick nests of other birds, such as the Pied Crow. Four to six eggs are laid, usually in September, and are incubated by the female only, who is fed by the male at regular intervals during incubation.^[3]

Diet

Insects take up the majority of the Malagasy Kestrel's diet, which are usually taken during flight, but it also occasionally eats small birds, frogs, and mammals, all of which are taken on the ground. It hunts from a low perch, hawking or hovering with the wing, at dawn or dusk.^[4]

Voice

The Malagasy Kestrel's call consists of a sharp scream of *iitsi, kitsi, kitsi, kitsi* or a loud repeated twitter.

References

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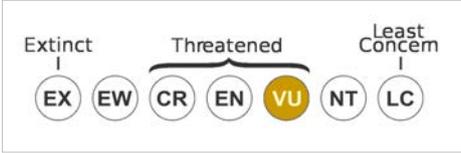
Footnotes

- [2] Erritzoe, Johannes & Erritzoe, Helga (1993): The Birds of CITES and How to Identify Them. Lutterworth Press. ISBN 0-7188-2895-X
- [3] The Hawk Conservancy Trust - Madagascar Kestrel (<http://www.hawk-conservancy.org/priors/madagascarkestrel.shtml>)
- [4] Global Raptor Information Network - Madagascar Kestrel (<http://www.globalraptors.org/grin/SpeciesResults.asp?specID=8245>)
- [5] <http://dx.doi.org/10.1016%2FS1055-7903%2802%2900254-3>

External links

- Breeding Biology and Food Habits of the Madagascar Kestrel (*Falco newtoni*) in Northeastern Madagascar (<http://www.peregrinefund.org/pdfs/ResearchLibrary/17227.pdf>) (PDF, engl.)
- Ecology of Aldabra Atoll, Indian Ocean edited by Dr. David R. Stoddart (<http://www.botany.hawaii.edu/faculty/duffy/ARB/118-119/118.pdf>) (PDF, engl.)

Seychelles Kestrel

Seychelles Kestrel	
	
Conservation status	
	
Vulnerable (IUCN 3.1)	
Scientific classification	
Kingdom:	Animalia
Phylum:	Chordata
Class:	Aves
Order:	Falconiformes
Family:	Falconidae
Genus:	<i>Falco</i>
Species:	<i>F. araea</i>
Binomial name	
<i>Falco araea</i> (Oberholser, 1917)	
Synonyms	
<i>Falco araeus</i>	

The **Seychelles Kestrel** (*Falco araea*) is a small bird of prey belonging to the genus *Falco* in the falcon family, Falconidae. It is endemic to the Seychelles Islands where it is the only breeding bird of prey. It is known in Seychellois Creole as the **Katiti** after its loud, shrill call.

Description

It is the smallest of the kestrels, 18–23 cm long with a wingspan of 40–45 cm. The wings are fairly short and rounded. The adult male's upperparts are reddish brown with black spots while the underparts are unspotted and buff. The head and rump are dark blue-grey. The tail is blue-grey with black bars. The bill is dark and the feet and cere are yellow. Females are similar to the males in appearance but are a little larger and paler. Immature birds have a brown, streaked head, spots on the breast and a buff tip to the tail.

Ecology

It can be seen in forest, scrub and farmland and around rock faces and houses. It rarely hovers, instead feeding by sitting on an exposed perch and waiting for prey to pass, then swooping down to catch it. Lizards, particularly green day geckos (*Phelsuma*) and skinks (*Mabuya*), make up 92% of its diet and it will also take small birds, frogs, rats and insects.

The breeding territory covers just 40 hectares, the smallest of any bird of prey. Breeding occurs from August to October. The nest site is on a cliff, tree or building. It is a simple scrape with no nest material used. Two or three eggs are laid; they are white with brown markings and are incubated for 28–31 days. The young birds fledge after 35–42 days and then remain with their parents for another 14 weeks.

Conservation

The species has a population of about 800 birds and is classified as Vulnerable. Lowland nests have a high failure rate of about 70-80%. It probably bred throughout the granitic central Seychelles in the past but is currently known to breed only on Mahé, Silhouette, North Island, Praslin and some small adjacent islands. It was reintroduced to Praslin in 1977.

Threats are thought to include habitat loss due to logging, housing development and fires as well as predation and competition by introduced species. Rats, cats and Barn Owls have reduced the lizard population on which the kestrels depend and they may take eggs and chicks. Barn Owls and Common Mynas have occupied many suitable nest sites.

Persecution by humans is now rare. In the past, kestrels were killed because they were thought to take chickens and because they were considered to be an omen of death.

References

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- Penny, Malcolm (1974) *The Birds of Seychelles and the Outlying Islands*, Collins, London.
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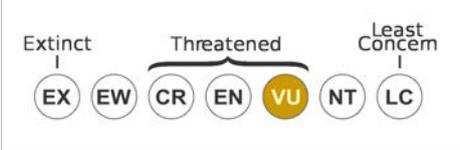
External links

- Nature Seychelles: Seychelles Kestrel ^[2]

References

- [1] <http://www.birdlife.org/datazone/species/index.html?action=SpHTMLDetails.asp&sid=3593&m=0>
- [2] http://www.natureseychelles.org/index.php?option=com_content&task=view&id=56&Itemid=83
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Mauritius Kestrel

Mauritius Kestrel	
	
Conservation status	
	
Vulnerable (IUCN 3.1) ^[1]	
Scientific classification	
Kingdom:	Animalia
Phylum:	Chordata
Class:	Aves
Order:	Falconiformes
Family:	Falconidae
Genus:	<i>Falco</i>
Species:	<i>F. punctatus</i>
Binomial name	
<i>Falco punctatus</i> Temminck, 1821	

The **Mauritius Kestrel** (*Falco punctatus*) is a bird of prey from the family Falconidae endemic to the forests of Mauritius, where it is restricted to the southwestern plateau's forests, cliffs, and ravines.^[1] It is the most distinct of the Indian Ocean kestrels. It colonized its island home to evolve into a distinct species probably during the Gelasian (Late Pliocene^[2]). It is the most distant living species among the western Indian Ocean kestrels (Groombridge *et al.* 2002, qv Réunion Kestrel).

Description

It can reach a size between 26 and 30.5 cm. The weight is up to 250 grams. The males are slightly smaller than the females. Wingspan is approximately 45 cm and wings are rounded, unlike those of other falcons.[□] The lifespan is 15 years in captivity. The Mauritius Kestrel hunts by means of short, swift flights through forests.[□] It is carnivorous, eating geckos, dragonflies, cicadas, cockroaches, crickets, and small birds.[□]

Conservation

The story of this bird is one of the most remarkable conservation stories. In pre-colonial time the population was estimated between 175 and 325 breeding pairs. This small population was caused most likely by deforestation in the 18th century and by cyclones. But the most severe decline was in the 1950s and 1960s due to indiscriminate DDT use and invasive species like cats, mongooses and Crab-eating Macaques which killed the kestrels and their eggs. What was probably this species' closest relative in recent times, the Réunion Kestrel, became extinct around 1700 for fairly mysterious reasons.

The recorded population dropped to an all-time low of only 4 individuals in 1974 and it was considered the rarest bird in the world. Stanley Temple from Cornell University studied this species for two years and the first attempt in 1973 to breed the birds in captivity failed because the hatchling died when the incubator had a breakdown. Though conservation measures were immediately undertaken with the help of a breeding program by the Jersey Zoo (now Durrell Wildlife Park), the efforts to rescue this species initially failed because the eggs were not fertile.

In 1979 a new attempt was undertaken. With the help of Gerald Durrell, the Welsh biologist Carl G. Jones established a wildlife sanctuary on Ile aux Aigrettes. He climbed on the trees and removed the eggs from the nests. This time the eggs were fertile, and Jones was able to rear the hatchlings in incubators. The wild kestrels' diet was supplemented so they would be able to lay a new egg after the first one was removed, averting any negative impact on the wild population. Slowly the population increased and during a census in 1984 50 individuals were estimated. Techniques for breeding, release, and "hacking" of young birds were improved, the captive breeding center becoming a pioneering research institution for tropical raptor and small falcon conservation. The captive breeding programme was scaled back in the early 1990s as a self-sustaining population was established. Since 1994, the programme serves only as a safeguard, should some catastrophe befall the wild population, and other rare endemics are now being cared for at the station (such as the Pink Pigeon or the Mauritius Fody).

Today there are more than 800 mature birds, with numbers rising; it is estimated that the remaining habitat allows for a carrying capacity of maybe 50-150 more (BirdLife International 2006a,b). They occur in the remaining forests of the island, especially in the Black River Gorges region. The species was downlisted to Vulnerable by the IUCN in 1994 as releases of captive-bred birds became unnecessary. Little conservation action was deemed necessary only two decades - in Mauritius Kestrel terms, a long lifetime or maybe 4-5 generations - after the species had stood at the very brink of extinction. Today, apart from routine monitoring to be able to assist individual couples that fail to establish breeding territories for lack of nesting facilities - a major limiting factor, the ongoing control of introduced predators is basically all that is being done to assist the species' survival (BirdLife International 2006a,b).

While some apparent inbreeding depression was noted in the captive birds, it was certainly lower than might be expected given that the effective population size was maybe 5 individuals during the mid-1970s. It is known that several genetic lineages of Mauritius Kestrels have disappeared entirely during the 20th century population decline. However, the debilitating effects of DDT accumulation on the birds' health, and not inbreeding, are considered to have been the major cause for the failure of Temple's breeding program.

The evolutionary history of the birds seems to hold clues as to why (Groombridge *et al.* 2002): Mauritius is a volcanic island, and although the colonization of the island by kestrels cannot be dated with high precision, it was almost certainly some time before volcanic activity died down. The Mauritius Kestrel population seems to have

survived a prolonged period of volcanic activity, which must have kept the population small and fluctuating as habitat, food, and kestrels were destroyed by volcanic eruptions time and again. As near-panmictic conditions were sustained for many generations, alleles that might cause inbreeding depression were steadily removed by means of natural selection. The phenomenon that effective population sizes as low as 4-5 can be tolerated without pronounced inbreeding depression is also known from other small-island birds, such as *Petroica traversi* or the Laysan Duck.

The classification as a Vulnerable species is due to the same fact: on an island as small as Mauritius, chance events like volcanic eruptions (hardly likely in our time) or storms (common and possibly increasing in frequency and strength) can always wipe out major parts of a species' population (BirdLife International 2006a,b). The IUCN classification **VU D1+D2** reflects this, translating into a population size of less than 1000 mature individuals, and less than 20 km² of occupied habitat.

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Footnotes

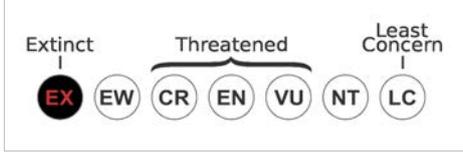
[2] Possibly to be moved to the Early Pleistocene. See Groombridge *et al.* (2002) for a thorough discussion of this species' recent evolutionary history.

[3] <http://www.birdlife.org/datazone/species/index.html?action=SpcHTMDetails.asp&sid=3592&m=0>

External links

- Mauritius Kestrel at the Peregrine Fund (http://www.peregrinefund.org/Explore_Raptors/falcons/mauritus.html)
- Mauritius Kestrel at Durrell Wildlife Conservation Trust (<http://www.durrell.org/Animals/Birds/Mauritius-Kestrel/>)

Réunion Kestrel

Réunion Kestrel	
Conservation status	
 <p>Extinct (c.1700) (IUCN 3.1)^[1]</p>	
Scientific classification	
Kingdom:	Animalia
Phylum:	Chordata
Class:	Aves
Order:	Falconiformes
Family:	Falconidae
Genus:	<i>Falco</i>
Species:	<i>F. duboisi</i>
Binomial name	
<p><i>Falco duboisi</i> Cowles, 1994</p>	

The **Réunion Kestrel** (*Falco duboisi*) is an extinct bird of prey which belongs to the falcon family. It inhabited the Mascarene island of Réunion and was part of the Western Indian Ocean radiation of kestrels.

Known from subfossil bones and the writings of Dubois published in 1674, this bird was larger than its relative *F. punctatus* on Mauritius, being about the size of a Common Kestrel, or around 35 cm from head to tail, with males being noticeably smaller than females. This trait, while present in most birds of prey, is most pronounced in the larger, bird-eating species and reduces between-sex competition by niche differentiation. It can be assumed that the bird was of the same generally brownish coloration as its closest relatives, with a lighter underside and darker spots or stipples, the tail, brown or more probably grey, being banded and tipped black. Its feet were yellow and large relative to the bird's overall size. The wingspan was 60–70 cm, its wings being more rounded than those of the Common Kestrel - just as in the Mauritius bird - for increased maneuverability when hunting in the forest. It is probable, but not certain, that the only difference between the sexes was their size. The bird fed mainly on birds, but certainly also on insects and the local gecko; Dubois noted that despite their small size they were able to prey on (presumably half-grown) domestic chickens.

Extinction

Dubois mentioned three kinds of birds of prey extant on Réunion in the early 1670s: in order of decreasing size, *papanges* (the local marsh harrier which still exists), *pieds jaunes* ("yellow-feet") and *émerillons* (a term for small falcons like the Merlin). It is not quite clear what name refers to the Réunion Kestrel. From reviewing the evidence, the bird was most probably the *émerillon*, with the *pieds jaunes* being either migrant falcons (the only species that might occur in the area, the Sooty Falcon, Eleonora's Falcon and the Peregrine Falcon, are larger than *F. duboisi* was, if not in overall length, then at least in wingspan) or the juveniles of the marsh harrier, which are distinctly colored and also have yellow feet. The latter explanation seems more likely as the name was unequivocally applied

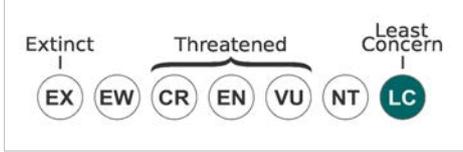
to young marsh harriers in the late 19th century. Nonetheless, it seems remotely possible that the Réunion Falcon's sexes were not only of different size, but also differently colored. In this case, the males would be the *émerillons* and the females the *pieds jaunes*.

This seems not likely, however, as FeuilleyWikipedia:Avoid weasel words in 1705 only mentions *papanges* and *pieds jaunes* as extant. The extinction of the Réunion Kestrel, which thus seems to have been complete around 1700, is something of a mystery, just as that of the Réunion Owl. Introduced predators were not present in numbers at that time and even rats probably would not have presented much of a problem for the birds. Certainly, they were considered a pest as they fed on poultry, but hunting is unlikely to have been able to reduce their population much at such an early time, as evidenced by the continuous survival of the marsh harrier, which was heavily persecuted for centuries for the same reason.

References

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Spotted Kestrel

Spotted Kestrel	
Conservation status	
 <p>Least Concern (IUCN 3.1)^[1]</p>	
Scientific classification	
Kingdom:	Animalia
Phylum:	Chordata
Class:	Aves
Order:	Falconiformes
Family:	Falconidae
Genus:	<i>Falco</i>
Species:	<i>F. moluccensis</i>
Binomial name	
<i>Falco moluccensis</i> (Bonaparte, 1850)	
Subspecies	
<ul style="list-style-type: none"> <i>Falco moluccensis moluccensis</i> <i>Falco moluccensis microbalius</i> 	

The **Spotted Kestrel** (*Falco moluccensis*) is also known as the Moluccan Kestrel.

Distribution and habitat

Spread throughout Australasia, Indomalaya, and most of Wallacea, the Spotted Kestrel inhabits grasslands with scattered trees, lightly wooded cultivation, and the edges of primary and tall secondary forest. Along logging roads, it occasionally penetrates forests, and sometimes inhabits clearings within forested areas. It has also been known to live in areas of human habitation.^[2]

Behavior

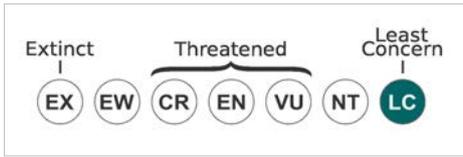
Diet

The Spotted Kestrel feeds primarily on small mammals, birds, mostly waterfowl and doves, lizards, and insects.

References

[2] Global Raptor Information Network - Moluccan Kestrel (<http://www.globalraptors.org/grin/SpeciesResults.asp?specID=8243>)

Nankeen Kestrel

Nankeen Kestrel	
	
Conservation status	
	
Least Concern (IUCN 3.1) ^[1]	
Scientific classification	
Kingdom:	Animalia
Phylum:	Chordata
Class:	Aves
Order:	Falconiformes
Family:	Falconidae
Genus:	<i>Falco</i>
Species:	<i>F. cenchroides</i>
Binomial name	
<p><i>Falco cenchroides</i> Vigors and Horsfield, 1827</p>	

The **Australian Kestrel** or **Nankeen Kestrel** (*Falco cenchroides*) is one of the smallest falcons, and unlike many, does not rely on speed to catch its prey. Instead, it simply perches in an exposed position, but it also has a distinctive technique of hovering over crop and grasslands. This bird is thought to be a very close relative of the Common Kestrel, and probably also the Spotted Kestrel. It seems to have evolved of ancestral Common Kestrels dispersing to the Australian region in the Middle Pleistocene—less than 1 million years ago—and adapting to local conditions.^[2]



About to pounce

A very common and easily seen raptor, the Nankeen Kestrel is found in Australia, New Guinea, and nearby islands, and is an irregular visitor to New Zealand. It occupies any type of land that is not too densely vegetated, but in particular temperate grasslands and open woodlands. In the tropical north and the sandy deserts of the west, it has a patchy and seasonal distribution.

Like many Australian birds, it has no clear migratory pattern: in the grasslands of the south, established pairs are resident year round, but many other birds migrate north during the austral winter, or roam the arid interior following food supplies.



With kill in talons, Rottneest Island, Western Australia

A small, slim falcon (about 31 to 35 centimetres or 12 to 14 inches long), the Nankeen Kestrel is rufous or brown above and white or off-white below, with a black tail tip. Plumage varies considerably in detail, and some birds can look very scruffy, but the slim build, small size and distinctive straight-winged hovering habit make identification easy. It can be seen in Western Australia on coastal cliffs and windy conditions. Also seen on phone lines and power lines. (The only other Australasian raptors to hover are the elanid kites which are much lighter in colour and a little larger, and the Brown Falcon, which is much larger and more heavily built, and hovers only with difficulty). Altogether, it looks just like a pale, less patterned, and smaller derivative of the Common Kestrel, which it indeed is (see Gloger's Rule,

Bergmann's Rule).



Nankeen Kestrel in flight

Diet is varied, with a large number of insects, but also small birds and reptiles, and in particular, small rodents, mostly mice. Nankeen Kestrels are adaptable and hunt in a number of different ways: of these, simply perching in an exposed position (such as on a dead tree or a telephone pole) and watching for prey is the most common, but it is their habit of hovering motionless over crop and grasslands that is most distinctive.

Typically seen singly or in pairs, they can aggregate into loose flocks of up to 30 when conditions are right. Pairs are typically monogamous and may or may not disperse to different areas during the non-breeding season. The nest is any convenient structure: a tree hollow, cliff ledge or disused corvid's nest, for example, and is not modified or added to by the kestrels.

Three to seven eggs are laid in late winter (usually about four) and incubated by the female alone. Hatching takes place after 26 to 28 days, and the male brings food while the female continues to incubate until the young are close to fledging, at which time the female leaves the nest to hunt for them too. Multiple broods are raised in good seasons.



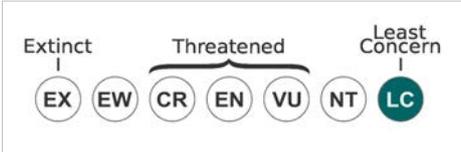
Female

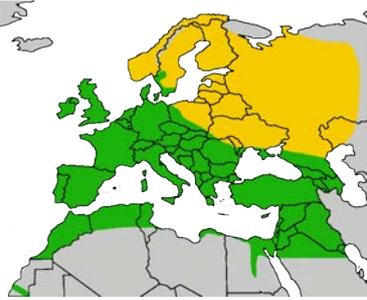
References

External links

- Wingspan Birds of Prey Trust (http://www.wingspan.co.nz/vagrant_birds_of_preynewzealandnankeenkestrel.html)- Rare vagrants to New Zealand

Common Kestrel

Common Kestrel	
	
Adult male <i>Falco tinnunculus tinnunculus</i>	
Conservation status	
	
Least Concern (IUCN 3.1) ^[1]	
Scientific classification	
Kingdom:	Animalia
Phylum:	Chordata
Class:	Aves
Subclass:	Neornithes
Infraclass:	Neognathae
Superorder:	Neoaves
Order:	Falconiformes
Family:	Falconidae
Genus:	<i>Falco</i>
Species:	<i>F. tinnunculus</i>
Binomial name	
<i>Falco tinnunculus</i> Linnaeus, 1758	
Subspecies	
About 11, see text	


Western part of range of <i>F. t. tinnunculus</i> (also occurs in Siberia farther east) Present all-year Breeding visitor only
Synonyms
<i>Falco rupicolus</i> Daudin, 1800 (but see text) <i>Falco tinnunculus interstictus</i> (lapsus)

The **Common Kestrel** (*Falco tinnunculus*) is a bird of prey species belonging to the kestrel group of the falcon family Falconidae. It is also known as the **European Kestrel**, **Eurasian Kestrel**, or **Old World Kestrel**. In Britain, where no other brown falcon occurs, it is generally just called "the **kestrel**".^[2]

This species occurs over a large range. It is widespread in Europe, Asia, and Africa, as well as occasionally reaching the east coast of North America. But although it has colonized a few oceanic islands, vagrant individuals are generally rare; in the whole of Micronesia for example, the species was only recorded twice each on Guam and Saipan in the Marianas.^[3]

Description



Common Kestrels measure 32–39 cm (13–15 in) from head to tail, with a wingspan of 65–82 cm (26–32 in). Females are noticeably larger, with the adult male weighing 136-252 g (c,5-9 oz), around 155 g (around 5.5 oz) on average; the adult female weighs 154-314 g (about 5.5-11 oz), around 184 g (around 6.5 oz) on average. They are thus small compared with other birds of prey, but larger than most songbirds. Like the other *Falco* species, they have long wings as well as a distinctive long tail.^[4]

Their plumage is mainly light chestnut brown with blackish spots on the upperside and buff with narrow blackish streaks on the underside; the remiges are also blackish. Unlike most raptors, they display sexual colour dimorphism with the male having fewer black spots and streaks, as well as a blue-grey cap and tail. The tail is brown with black bars in females, and has a black tip with a narrow white rim in both sexes. All Common Kestrels have a prominent black malar stripe like their closest relatives.^[4]

The cere, feet, and a narrow ring around the eye are bright yellow; the toenails, bill and iris are dark. Juveniles look like adult females, but the underside streaks are wider; the yellow of their bare parts is paler. Hatchlings are covered in white down feathers, changing to a buff-grey second down coat before they grow their first true plumage.^[4]



Adult male *F. t. tinnunculus*
landing



Young male *F. t. tinnunculus* during ringing



Closeup of adult
male



Female *F. t. tinnunculus*

Behaviour and ecology

In the cool-temperate parts of its range, the Common Kestrel migrates south in winter; otherwise it is sedentary, though juveniles may wander around in search for a good place to settle down as they become mature. It is a diurnal animal of the lowlands and prefers open habitat such as fields, heaths, shrubland and marshland. It does not require woodland to be present as long as there are alternate perching and nesting sites like rocks or buildings. It will thrive in treeless steppe where there are abundant herbaceous plants and shrubs to support a population of prey animals. The Common Kestrel readily adapts to human settlement, as long as sufficient swathes of vegetation are available, and may even be found in wetlands, moorlands and arid savanna. It is found from the sea to the lower mountain ranges, reaching up to 4,500 m (15,000 ft) ASL in the hottest tropical parts of its range but only to about 1,750 meters (5,700 ft) in the subtropical climate of the Himalayan foothills^[5]

Globally, this species is not considered threatened by the IUCN.^[6] Its stocks were affected by the indiscriminate use of organochlorines and other pesticides in the mid-20th century, but being something of an r-strategist able to multiply quickly under good conditions it was less affected than other birds of prey. The global population is fluctuating considerably over the years but remains generally stable; it is roughly estimated at 1-2 million pairs or so, about 20% of which are found in Europe. There has been a recent decline in parts of Western Europe such as Ireland. Subspecies *dacotiae* is quite rare, numbering less than 1000 adult birds in 1990, when the ancient western Canarian subspecies *canariensis* numbered about ten times as many birds.^[4]

Food and feeding



When hunting, the Common Kestrel characteristically hovers about 10–20 m (c.30–70 ft) above the ground, searching for prey, either by flying into the wind or by soaring using ridge lift. Like most birds of prey, Common Kestrels have keen eyesight enabling them to spot small prey from a distance. Once prey is sighted, the bird makes a short, steep dive toward the target. It can often be found hunting along the sides of roads and motorways. This species is able to see near ultraviolet light, allowing the birds to detect the urine trails around rodent burrows as they shine in an ultraviolet colour in the sunlight.^[7] Another favourite (but less conspicuous) hunting technique is to perch a bit above the ground cover, surveying the area. When the birds spot prey animals moving by, they will pounce on them. They also prowl a patch of hunting ground in a ground-hugging flight, ambushing prey as they happen across it.^[4]

Common Kestrels eat almost exclusively mouse-sized mammals: typically voles, but also shrews and true mice supply up to three-quarters or more of the biomass most individuals ingest. On oceanic islands (where mammals are often scarce), small birds – mainly passerine – may make up the bulk of its diet[8] while elsewhere birds are only important food during a few weeks each summer when unexperienced fledglings abound. Other suitably sized vertebrates like bats,[9] frogs and lizards are eaten only on rare occasions. However, kestrels may more often prey on lizards at southern latitudes, in northern latitudes the kestrel is found to more often deliver lizards to their nestlings during midday and also with increasing ambient temperature.[10] Seasonally, arthropods may be a main prey item. Generally, invertebrates like camel spiders and even earthworms, but mainly sizeable insects such as beetles, orthopterans and winged termites are eaten with delight whenever the birds happen across them.[4]

F. tinnunculus requires the equivalent of 4-8 voles a day, depending on energy expenditure (time of the year, amount of hovering, etc.). They have been known to catch several voles in succession and cache some for later consumption. An individual nestling consume on average 4.2 g/h, this is equivalent to 67.8 g/d (3-4 voles per day).[11]

Reproduction

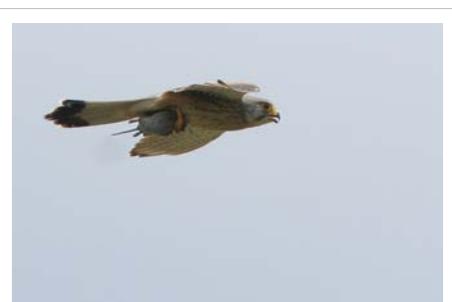
The Common Kestrel starts breeding in spring (or the start of the dry season in the tropics), i.e. April/May in temperate Eurasia and some time between August and December in the tropics and southern Africa. It is a cavity nester, preferring holes in cliffs, trees or buildings; in built-up areas, Common Kestrels will often nest on buildings, and generally they often reuse the old nests of corvids if are available. The diminutive subspecies *dacotiae*, the *sarnicolo* of the eastern Canary Islands is peculiar for nesting occasionally in the dried fronds below the top of palm trees, apparently coexisting rather peacefully with small songbirds which also make their home there.[12] In general, Common Kestrels will usually tolerate conspecifics nesting nearby, and sometimes a few dozen pairs may be found nesting in a loose colony.[4]

The clutch is normally 3-6 eggs, but may contain any number of eggs up to seven; even more eggs may be laid in total when some are removed during the laying time, which lasts about 2 days per egg laid. The eggs are abundantly patterned with brown spots, from a wash that tinges the entire surface buffish white to large almost-black blotches. Incubation lasts some 4 weeks to one month, and only the female hatches the eggs. The male is responsible for provisioning her with food, and for some time after hatching this remains the same. Later, both parents share brooding and hunting duties until the young fledge, after 4–5 weeks. The family stays close together for a few weeks, up to a month or so, during which time the young learn how to fend for themselves and hunt prey. The young become sexually mature the next breeding season.[4]

Data from Britain shows nesting pairs bringing up about 2-3 chicks on average, though this includes a considerable rate of total brood failures; actually, few pairs that do manage to fledge offspring raise less than 3 or 4. Population



European Pine Vole (*Microtus subterraneus*), a typical Common Kestrel prey since prehistoric times



Male *F. t. tinnunculus* bringing food to nest

cycles of prey, particularly voles, have a considerable influence on breeding success. Most Common Kestrels die before they reach 2 years of age; mortality til the first birthday may be as high as 70%. At least females generally breed at one year of age;^[13] possibly, some males take a year longer to maturity as they do in related species. The biological lifespan to death from senescence can be 16 years or more, however; one was recorded to have lived almost 24 years.^[13]



Egg



Hatchling (note white down)



Fledglings in nest cavity



Immature after fledging

Evolution and systematics

This species is part of a clade that contains the kestrel species with black malar stripes, a feature which apparently was not present in the most ancestral kestrels. They seem to have radiated in the Gelasian (Late Pliocene,^[14] roughly 2.5-2 mya, probably starting in tropical East Africa, as indicated by mtDNA cytochrome *b* sequence data analysis and considerations of biogeography. The Common Kestrel's closest living relative is apparently the Nankeen or Australian Kestrel (*F. cenchroides*), which probably derived from ancestral Common Kestrels settling in Australia and adapting to local conditions less than one million years ago, during the Middle Pleistocene.^[15]

The Rock Kestrel may be a distinct species *F. rupicolus*, more distantly related to the Common Kestrel proper than the Nankeen Kestrel; its relationship to the other African and South Asian kestrel taxa remains insufficiently studied. The Canary Islands subspecies are apparently independently derived from Continental birds.^[16]

The Lesser Kestrel (*F. naumanni*), which much resembles a small Common Kestrel with no black on the upperside except wing and tail tips, is probably not very closely related to the present species, and the American Kestrel (*F. sparverius*) is apparently not a true kestrel at all.^[16] Both species have much grey in their wings in males, which does not occur in the Common Kestrel or its close living relatives but does in almost all other falcons.

Subspecies

A number of subspecies of the Common Kestrel are known, though some are hardly distinct and may be invalid. Most of them differ little, and mainly in accordance with Bergmann's and Gloger's Rules. Tropical African forms have less grey in the male plumage.^[4]

- *Falco tinnunculus tinnunculus* Linnaeus, 1758

Temperate areas of Europe, North Africa, the Middle East, and Asia north of the Hindu Kush-Himalaya mountain ranges to the NW Sea of Okhotsk region. Northern Asian populations migrate south in winter, apparently not crossing the Himalayas but diverting to the west.

- *Falco (tinnunculus) rupicolus* Daudin, 1800 – **Rock Kestrel**



Rock Kestrel (presumably male)

NW Angola and S Zaire to S Tanzania, and south to South Africa. Probably a distinct species, but its limits with *rufescens* require further study. It differs markedly from the other subspecies of the *F. tinnunculus* complex. In particular, the females have what in other subspecies are typically male characteristics such as a grey head and tail, and spotted rather than barred upperparts. The Rock Kestrel has less heavily marked, brighter chestnut upperparts and its underparts are also a bright chestnut that contrasts with the nearly unmarked white underwings. Females tend to have more black bands in the central tail feathers than males. The open mountain habitat also differs from that its relatives.



Female *F. t. interstictus* wintering in Kinnerasani Wildlife Sanctuary (Andhra Pradesh, India)

- *Falco tinnunculus rufescens* Swainson, 1837
Sahel east to Ethiopia, southwards around Congo basin to S Tanzania and NE Angola.
- *Falco tinnunculus interstictus* McClelland, 1840
Breeds East Asia from Tibet to Korea and Japan, south into Indochina. Winters to the south of its breeding range, from India to the Philippines (where it is localized, e.g. from Mindanao only two records exist).^[17] Birds in the Himalayan foothills (e.g. of Bhutan)^[18] might be all-year residents
- *Falco tinnunculus rupicolaeformis* (C. L. Brehm, 1855)
Arabian Peninsula except in the desert and across the Red Sea into Africa.
- *Falco tinnunculus neglectus* Schlegel, 1873
Northern Cape Verde Islands.
- *Falco tinnunculus canariensis* (Koenig, 1890)
Madeira and western Canary Islands. The more ancient Canaries subspecies.
- *Falco tinnunculus dacotiae* Hartert, 1913 – Local name: **cernícalo**
Eastern Canary Islands: Fuerteventura, Lanzarote, Chinijo Archipelago. A more recently evolved subspecies than *canariensis*.
- *Falco tinnunculus objurgatus* (Baker, 1929)
Western, Nilgiris and Eastern Ghats of India; Sri Lanka. Heavily marked, has rufous thighs with dark grey head in males.^[19]
- *Falco tinnunculus archerii* (Hartert & Neumann, 1932)
Somalia, coastal Kenya, and Socotra
- *Falco tinnunculus alexandri* Bourne, 1955
Southwestern Cape Verde Islands.



F. t. canariensis on Gran Canaria



F.t. from Hurghada

The Common Kestrels of Europe living during cold periods of the Quaternary glaciation differed slightly in size from the current population; they are sometimes referred to as paleosubspecies *F. t. atavus* (see also Bergmann's

Rule). The remains of these birds, which presumably were the direct ancestors of the living *F. t. tinnunculus* (and perhaps other subspecies), are found throughout the then-unglaciated parts of Europe, from the Late Pliocene (ELMA Villanyian/ICS Piacenzian, MN16) about 3 million years ago to the Middle Pleistocene Saalian glaciation which ended about 130,000 years ago, when they finally gave way to birds indistinguishable from those living today. Some of the voles the Ice Age Common Kestrels ate – such as European Pine Voles (*Microtus subterraneus*) – were indistinguishable from those alive today. Other prey species of that time evolved more rapidly (like *M. malei*, the presumed ancestor of today's Tundra Vole *M. oeconomus*), while yet again others seem to have gone entirely extinct without leaving any living descendants – for example *Pliomys lenki*, which apparently fell victim to the Weichselian glaciation about 100,000 years ago.^[20]

In culture

The Kestrel is sometimes seen, like other birds of prey, as a symbol of the power and vitality of nature. In "Into Battle" (1915), the war poet Julian Grenfell invokes the superhuman characteristics of the Kestrel among several birds, when hoping for prowess in battle:

"The kestrel hovering by day,
And the little owl that call at night,
Bid him be swift and keen as they,
As keen of ear, as swift of sight."

Gerard Manley Hopkins (1844–1889) writes on the kestrel in his poem *The Windhover*, exalting in their mastery of flight and their majesty in the sky.

"I caught this morning morning's minion, king-
dom of daylight's dauphin, dapple-dawn-drawn Falcon, in his riding"

Archaic names for the kestrel include *windhover* and *windfucker*, due to its habit of beating the wind (hovering in air).^[21]

A kestrel is also one of the main characters in *The Animals of Farthing Wood*.

Footnotes

[2] MWBG [2009]

[3] Orta (1994), Wiles *et al.* (2000, 2004)

[4] Orta (1994)

[5] Orta (1994), Inskipp *et al.* (2000)

[6] BLI (2008)

[7] Viitala *et al.* (1995)

[8] Wiles *et al.* (2004)

[9] Mikula *et al.* (2013)

[10] Steen *et al.* (2011a)

[11] Steen *et al.* (2011b)

[12] Álamo Távio (1975)

[13] AnAge [2010]

[14] Possibly to be reclassified as Early Pleistocene.

[15] See Groombridge *et al.* (2002) for a thorough discussion of Common Kestrel and relatives' divergence times.

[16] Groombridge *et al.* (2002)

[17] Peterson *et al.* (2008)

[18] Inskipp *et al.* (2000)

[19] Whistler (1949): 385-387, Rasmussen & Anderton (2005): 112-113

[20] Mlíkovský (2002): pp.222-223, Mourer-Chauviré *et al.* (2003)

[21] Oxford English Dictionary

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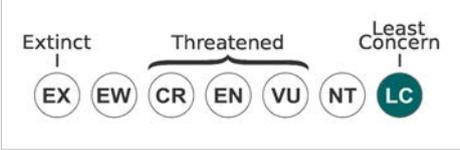
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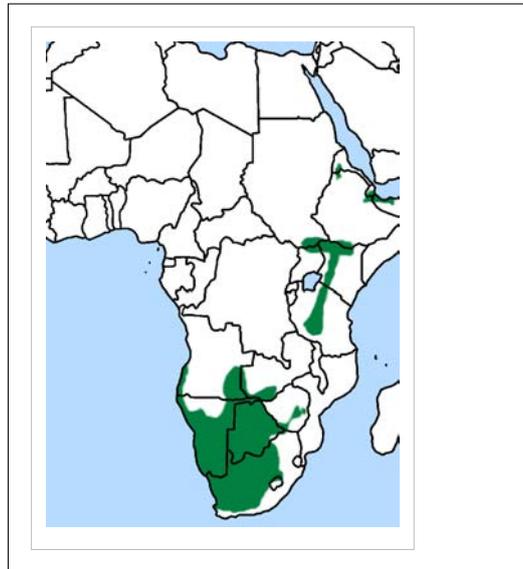
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External links

- Rock Kestrel - Species text in The Atlas of Southern African Birds (<http://sabap2.adu.org.za/docs/sabap1/181.pdf>).
- ARKive - images and movies of the kestrel (*Falco tinnunculus*) (http://www.arkive.org/species/ARK/birds/Falco_tinnunculus/)
- Kestrels in Israel (http://www.birds.org.il/show_item.asp?itemId=2906&levelId=1324)
- Royal Society for the Protection of Birds (<http://www.rspb.org.uk/birds/guide/k/kestrel/index.asp>)
- Text of the Hopkins poem (<http://www.bartleby.com/122/12.html>)
- Kestrel on-line 2013: Brest, Belarus (http://birdwatch.by/pustalga_brest2013)
- Kestrel on-line 2012: Groningen, The Netherlands (http://www.vogelcamera.nl/index.php?option=com_k2&view=item&layout=item&id=98&Itemid=64)
- Live Streaming of Common Kestrel nest in Amadora, Portugal (<http://www.livestream.com/janelafalcao>)
- Ageing and sexing (PDF; 5.5 MB) by Javier Blasco-Zumeta & Gerd-Michael Heinze (http://www.ibercajalav.net/img/131_KestrelFtinnunculus.pdf)

Greater Kestrel

Greater Kestrel	
	
Conservation status	
	
Least Concern (IUCN 3.1) ^[1]	
Scientific classification	
Kingdom:	Animalia
Phylum:	Chordata
Class:	Aves
Order:	Falconiformes
Family:	Falconidae
Genus:	<i>Falco</i>
Species:	<i>F. rupicoloides</i>
Binomial name	
<i>Falco rupicoloides</i> (Smith, 1829)	



The **Greater Kestrel** or **White-eyed Kestrel** (*Falco rupicoloides*) is a bird of prey belonging to the falcon family Falconidae. It is one of the largest kestrels and is found in open country in southern and eastern Africa.

Description



At Etosha National Park, Namibia

The plumage of the adult is mainly pale rufous, both above and below. The back, upperwing and flanks are barred with black. The breast has dark streaks and the head is streaked but has no malar stripe unlike the Common and Lesser Kestrels. The rump and tail are grey with black bars; the tail has a white tip. In flight, the whitish underwing contrasts with the darker body. The iris of the eye is whitish, distinguishing the bird from any similar species. The bill is mainly blue-grey and the feet and cere are yellow. Juvenile birds have rufous instead of grey on the tail, streaked flanks and a dark eye.

The bird is 29–37 cm long with a wingspan of 68–84 cm. The southern subspecies *F. r. rupicoloides* weighs about 181–334 grams. The form *F. r. arthuri* is smaller, weighing about 165–252 grams. The northern subspecies *F. r. fieldi* is also small and is paler than the others.

The species is usually silent but has a shrill, repeated call.

Habitat and range

It occurs in open, arid areas where it inhabits grassland, savannas and semi-desert. It is often associated with acacias. It prefers areas where the ground cover is lower than 50 cm. It is found from sea-level up to 2150 metres, particularly between 800 and 1800 metres.

It is fairly common and widespread in the southern parts of its range but is scarce and patchily distributed further north. The form *F. r. rupicoloides* breeds in Namibia, Botswana, Zimbabwe, parts of Angola and Zambia and in much of South Africa apart from the wetter regions of the south and east. *F. r. arthuri* is found in Kenya and northern Tanzania while *F. r. fieldi* occurs in Ethiopia, Eritrea, northern Somalia and probably northern Kenya.

The total range covers about 3.5 million km². The population is stable and is likely to be in the order of 100,000 to 200,000 pairs. Most birds are sedentary but some are nomadic or dispersive.

Feeding

The Greater Kestrel usually hunts from an exposed perch such as a tree or rock. It also hovers like several other kestrels. It feeds mainly on invertebrates such as grasshoppers, termites, beetles and solifugids. It also takes lizards and sometimes small birds, mammals and snakes. It mainly catches prey on the ground. It is attracted to fires where it catches insects and other prey as they flee from the flames. Excess food may be cached underneath vegetation or stones.

Reproduction

The breeding season varies between different regions. In the south it lasts from July to April with a peak between September and December. Breeding takes place in all months in Kenya and Tanzania but is concentrated between April and July. The season lasts from April to August in Somalia.

Greater Kestrels use the old nest of another bird for breeding, such as that of a Cape Crow or Pied Crow. A typical site is between 2 and 20 metres above the ground in a tree or sometimes on a telegraph pole or pylon. Two to seven eggs are laid with three or four being most common. They are incubated for 22 to 23 days, mainly by the female. The young birds fledge after 30 to 34 days and remain dependent on their parents for at least 26 days longer.



Juvenile, Serengeti National Park, Tanzania

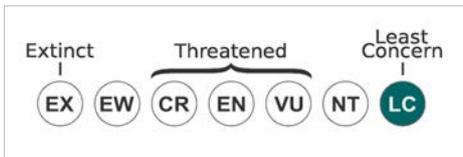
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External links

- Greater Kestrel - Species text in The Atlas of Southern African Birds (<http://sabap2.adu.org.za/docs/sabap1/182.pdf>).

Fox Kestrel

Fox Kestrel	
	
Conservation status	
	
Least Concern (IUCN 3.1) ^[1]	
Scientific classification	
Kingdom:	Animalia
Phylum:	Chordata
Class:	Aves
Order:	Falconiformes
Family:	Falconidae
Genus:	<i>Falco</i>
Species:	<i>F. alopex</i>
Binomial name	
<i>Falco alopex</i> (Heuglin, 1861)	

The **Fox Kestrel** (*Falco alopex*) is a bird of prey belonging to the falcon family Falconidae. It is found in arid, open country in Africa.

Description

It is a large, slender kestrel with long, narrow wings and tail. It is 32–38 cm long with a wingspan of 76–88 cm and a weight of 250-300 grams. The female is 3% larger than the male. The plumage is dark rufous above and below with black streaks. The tail is narrowly barred with black while the flight feathers of the wing are dark and unbarred. The underwings are pale, contrasting with the darker body. The eye is yellow-brown unlike the similar Greater Kestrel which has whitish eyes as well as paler plumage, barred flight feathers and grey on the tail.

Juvenile Fox Kestrels have heavier streaking than the adults and clearer barring on the tail.

The species has a high, screeching call but is usually silent outside the breeding season.

Habitat and range

It breeds in the savanna region south of the Sahara from Mali eastwards as far as Ethiopia and north-west Kenya. It occasionally wanders west to Senegal, the Gambia and Guinea and south to the Democratic Republic of the Congo. Most birds are sedentary but there is some movement northward during the wet season and southward in the dry season. It is often found around cliffs and rocky hills. It occurs from near sea-level to 2200 metres, especially below 1000 metres. It has a large range of about 4 million km² but is usually uncommon. Its total population is probably less than 100,000 pairs.

Behaviour

It rarely hovers, preferring to hunt from a perch in a tree or on a rock. It feeds on insects, lizards and small mammals. It generally catches food on the ground but also hunts for flying insects escaping from grass fires.

Little is known about its breeding habits. The nest site is a hole or crevice in a cliff or on a ledge. No nesting material is used. The clutch is thought to consist of two or three eggs. The birds sometimes breed in loose colonies of up to 20 pairs.

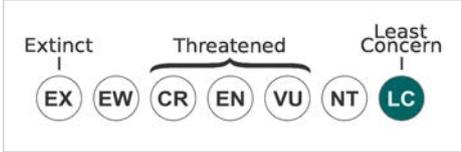
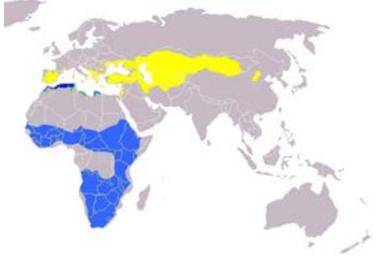
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External links

- Fox Kestrel (*Falco alopex*) pictures (http://www.kestreling.com/gallery_fox_kestrel.html)

Lesser Kestrel

Lesser Kestrel	
	
Male (right) and females	
Conservation status	
	
Least Concern (IUCN 3.1) ¹	
Scientific classification	
Kingdom:	Animalia
Phylum:	Chordata
Class:	Aves
Order:	Falconiformes
Family:	Falconidae
Genus:	<i>Falco</i>
Species:	<i>F. naumanni</i>
Binomial name	
<p><i>Falco naumanni</i> Fleischer, 1818</p>	
	
<p>Nesting area Wintering area All-year resident</p>	

The **Lesser Kestrel** (*Falco naumanni*) is a small falcon. This species breeds from the Mediterranean across southern central Asia to China and Mongolia. It is a summer migrant, wintering in Africa and Pakistan and sometimes even to India and Iraq. It is rare north of its breeding range, and declining in its European range. The scientific name of this bird commemorates the German naturalist Johann Andreas Naumann.

Description



Female in flight showing whitish talons

It is a small bird of prey, 27–33 cm in length with a 63–72 cm wingspan. It looks very much like the larger Common Kestrel but has proportionally shorter wings and tail. It shares a brown back and barred grey underparts with the larger species. The male has a grey head and tail like male Common Kestrels, but lacks the dark spotting on the back, the black malar stripe, and has grey patches in the wings.

The female and young birds are slightly paler than their relative, but are so similar that call and structure are better guides than plumage. The call is a diagnostic harsh *chay-chay-chay*, unlike the Common Kestrel's *kee-kee-kee*. Both sexes do not have dark talons as usual in

falcons; those of this species are a peculiar whitish-horn color. This, however, is only conspicuous when seen birds at very close range, e.g. in captivity.

Despite its outward similarity, this species appears not to be closely related to the Common Kestrel. In fact, mtDNA cytochrome *b* sequence analysis (Groombridge *et al.* 2002) places it at a basal position with regards to the other "true" kestrels (i.e., excluding the American Kestrel and probably the grey African kestrels too).^[1] Its divergence is tentatively placed to around the Miocene-Pliocene boundary (Messinian to Zanclean, or about 7-3.5 mya). The morphological similarity with the Common Kestrel is most puzzling, but still it appears to betray the present species' actual relationships: the lack of a malar stripe seems ancestral for kestrels, and the grey wing colour unites the Lesser Kestrel with most other *Falco* species, but not the other true kestrels.



Lesser Kestrel – a very rare winter migrant to India

The Lesser Kestrel is, as the name implies, a smaller and more delicate bird than the Common Kestrel, and it is entirely sympatric in its breeding range with it; they compete to a limited extent. Thus, the possibility that there is some form of adaptive advantage to the similar coloration deserves study. Considering that the Lesser Kestrel would in fact have an advantage if some would-be predators confuse it with the larger species and consequently avoid it, it might be a case of Müllerian mimicry.

The Lesser Kestrel eats insects, but also small birds, reptiles and rodents (especially mice),^[2] which are often taken on the ground. It nests colonially on buildings, cliffs, or in tree holes, laying up to 3-6

eggs. No nest structure is built, which is typical for falcons. Recent surveys (January 2007) by LPO[3] have revealed that in their wintering grounds, Lesser Kestrels roost communally - sometimes in huge numbers. A roost discovered in Senegal during one of these surveys held 28,600 birds, together with 16,000 Scissor-tailed Kites *Chelictinia riocourii*.^[4]

It is widespread and plentiful on a global scale, and the IUCN have classed it as Least Concern.^[1] Apart from possible habitat destruction, it appears that indiscriminate use of pesticides has a strong effect on this species due to its insectivorous habits.^[5]

Gallery



From John Gould's *Birds of Europe*.

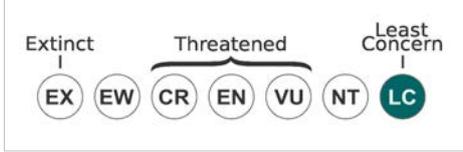
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- [3] Surveys reveal raptor 'super-roost' (http://www.birdlife.org/news/news/2007/04/raptor_super_roost.html)
- [4] BirdLife International (2006) Lesser Kestrel - BirdLife International Species Factsheet (<http://www.birdlife.org/datazone/species/index.html?action=SpcHTMDetails.asp&sid=3589&m=0>). Retrieved 2007-MAR-1.

External links

- Species text in The Atlas of Southern African Birds (<http://sabap2.adu.org.za/docs/sabap1/183.pdf>).
- Lesser Kestrel breeding in a village in the south of France (<http://www.jerome-guillaumot.com/gallery/2233276>)
- Ageing and sexing (PDF; 3.5 MB) by Javier Blasco-Zumeta & Gerd-Michael Heinze (http://www.ibercajalav.net/img/130_LesserKestrelFnaumanni.pdf)

Grey Kestrel

Grey Kestrel	
	
Conservation status	
	
Least Concern (IUCN 3.1) ^[1]	
Scientific classification	
Kingdom:	Animalia
Phylum:	Chordata
Class:	Aves
Order:	Falconiformes
Family:	Falconidae
Genus:	<i>Falco</i>
Species:	<i>F. ardosiaceus</i>
Binomial name	
<i>Falco ardosiaceus</i> Vieillot, 1823	

The **Grey Kestrel** (*Falco ardosiaceus*) is an African bird of prey belonging to the falcon family Falconidae. Its closest relatives are the Banded Kestrel and Dickinson's Kestrel and the three are sometimes placed in the subgenus *Dissodectes*.

Description

It is a fairly small, stocky kestrel with a large, flat-topped head and fairly short wings that don't reach past the tip of the tail when at rest. It is 28–33 cm long with a wingspan of 58–72 cm and a weight of up to 300 grams. The female is 4-11% larger and 5-11% heavier than the male. The plumage of the adult is uniformly dark grey apart from darker wingtips, faint dark streaking on the body and slightly barred flight feathers. The feet and cere are yellow and there is bare yellow skin around the eye. The most similar species is the Sooty Falcon which has a more rounded head, long wings extending past the tail and less yellow around the eye.

Juvenile Grey Kestrels are browner than the adults with a greenish cere and greenish around the eye. Juvenile Dickinson's Kestrels are similar but have a barred tail and a more strongly barred underwing.

The Grey Kestrel is generally silent outside the breeding season but has a shrill, chattering call and a rattling whistle.

Habitat and range

It inhabits savannas, open woodland and forest clearings. It favours areas with palm trees, especially near water. It often perches on exposed branches, telegraph poles and wires.

It is widespread in West and Central Africa but is absent from densely forested regions including parts of the Congo Basin. Its range extends east to Ethiopia and western parts of Kenya and Tanzania. In the south it reaches northern parts of Namibia and Zambia and vagrants have appeared in Malawi. The total range covers about 12 million km². In West Africa there is some movement northward in the wet season and southward in the dry season.

Behaviour

It is a crepuscular bird, most active at dawn and dusk. It generally hunts from a high perch but occasionally hovers. It feeds mainly on insects, lizards and small mammals such as bats but will also take birds, amphibians and worms. Prey is usually caught on the ground. It will sometimes feed on oil palm nuts, one of the few birds of prey to eat vegetable matter.

Breeding occurs from March to June in the north of its range and from August to December in the south. Courting pairs perform mutual soaring displays. The eggs are usually laid in the nest of a Hamerkop; most often an unoccupied nest but occasionally Hamerkops will be forced out. Sometimes the kestrels will use the nest of another bird or a hole in a tree. There are two to five eggs in a clutch. They are whitish with reddish or brown markings and are incubated for 26–31 days. The young birds fledge after about 30 days.

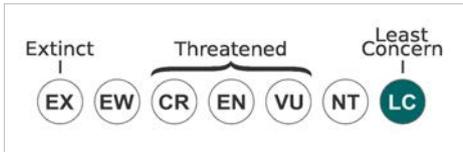
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- Zimmerman, Dale A.; Turner, Donald A. & Pearson, David J. (1999) *Birds of Kenya & Northern Tanzania*, Christopher Helm, London.

External links

- Grey Kestrel - Species text in The Atlas of Southern African Birds (<http://sabap2.adu.org.za/docs/sabap1/184.pdf>).
 - Grey Kestrel (*Falco ardosiaceus*) pictures (http://www.kestreling.com/gallery_grey_kestrel.html)
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Dickinson's Kestrel

Dickinson's Kestrel	
	
Conservation status	
	
Least Concern (IUCN 3.1) ^[1]	
Scientific classification	
Kingdom:	Animalia
Phylum:	Chordata
Class:	Aves
Order:	Falconiformes
Family:	Falconidae
Genus:	<i>Falco</i>
Species:	<i>F. dickinsoni</i>
Binomial name	
<i>Falco dickinsoni</i> Slater, 1864	

Dickinson's Kestrel (*Falco dickinsoni*) is a bird of prey of southern and eastern Africa belonging to the falcon family Falconidae. It is named after John Dickinson, an English physician and missionary who collected the type specimen. It is also known as the **White-rumped Kestrel**. Its closest relatives are the Grey Kestrel and Banded Kestrel and the three are sometimes placed in the subgenus *Dissodectes*.

Description

It is a fairly small, stocky kestrel with a large, square head. It is 27–30 cm long with a wingspan of 61–68 cm and a weight of 167–246 grams. The female is about 4% larger and 10–20% heavier than the male. The plumage is mostly dark grey with a pale head and rump. The tail is grey with narrow black bars and a broad subterminal band. The underside of the flight feathers are also barred. The cere and feet are yellow and there is bare yellow skin around the eye. The bill is dark grey and the eyes are brown. Juvenile birds are grey-brown with barred flanks and without the paler head and rump. They have a greenish cere and eye-ring.

It is usually silent but has a high-pitched alarm and contact call. At the nest, a soft, mewling call attracts the young for feeding.

Habitat and range

It inhabits savanna and open woodland, particularly swampy areas near water. It is typically associated with palm trees (such as *Hyphaene* and *Borassus* species) and is also often found near baobab trees. It occurs in coconut plantations in some areas.

Its range covers most of Mozambique, Zimbabwe, Zambia and Malawi along with north-eastern South Africa (mainly in Kruger National Park), northern Botswana, north-east Namibia, eastern Angola, southern Democratic Republic of the Congo and parts of Tanzania. It is an occasional visitor to Kenya. The total range is about 3.4 million km². It is generally rather scarce but is commoner in some areas such as Zanzibar and Pemba Islands. Loss of palm trees is a potential threat to the species.

Behaviour

It usually hunts from a perch and only occasionally hovers. Large insects such as grasshoppers form the bulk of the diet. It also feeds on lizards and amphibians and sometimes birds, bats, rodents and snakes. It is often attracted to grass fires where it preys on fleeing insects and other prey.

The breeding season lasts from July to October in Tanzania and September to December further south. The nest is a simple scrape with no material used. It is sited 2 to 18 metres above the ground in the crown of a dead palm or in a hole in a baobab. Sometimes the old nest of a Hamerkop is used. One to four eggs are laid. They are cream-coloured with reddish-brown markings and are incubated by the female for at least 30 days. The young birds fledge after approximately 33 to 35 days.

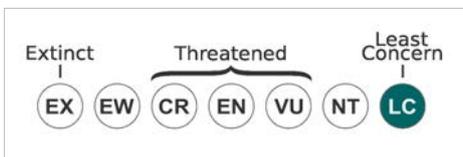
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External links

- Dickinson's Kestrel - Species text in The Atlas of Southern African Birds (<http://sabap2.adu.org.za/docs/sabap1/185.pdf>).
 - Dickinson's Kestrel (*Falco dickinsoni*) pictures (http://www.kestreling.com/gallery_dickinsons_kestrel.html)
-

Banded Kestrel

Banded Kestrel	
	
Conservation status	
	
Least Concern (IUCN 3.1) ^[1]	
Scientific classification	
Kingdom:	Animalia
Phylum:	Chordata
Class:	Aves
Order:	Falconiformes
Family:	Falconidae
Genus:	<i>Falco</i>
Species:	<i>F. zoniventris</i>
Binomial name	
<i>Falco zoniventris</i> Peters, 1854	

The **Banded Kestrel** (*Falco zoniventris*) is a bird of prey belonging to the falcon family Falconidae. It is endemic to Madagascar and is also known as the **Madagascar Banded Kestrel**, **Barred Kestrel** or **Madagascar Barred Kestrel**. Its closest relatives are the Grey Kestrel and Dickinson's Kestrel of mainland Africa and the three are sometimes placed in the subgenus *Dissodectes*.

It is 27–30 cm long with a wingspan of 60–68 cm. The upperparts are grey and the tail is dark. The underparts are whitish with dark grey streaks on the throat and upper breast and dark grey barring on the lower breast and belly. The feet, eyes and cere are yellow and there is bare yellow skin around the eye. Juvenile birds are browner than the adults with darker eyes and less bare skin around the eye.

The species has a shrill, staccato, chattering call and a sharp, screaming call but is usually silent outside the breeding season.

It is fairly common in the southern and western parts of Madagascar but more local in the north and east and absent from the central plateau. It occurs from sea-level up to 2000 metres. It inhabits clearings and edges in forest and woodland.

It rarely hovers, preferring to hunt from a perch. It feeds on small reptiles such as chameleons and day geckos, large insects such as grasshoppers and beetles and occasionally on birds. Prey is caught on the ground or snatched from a branch or tree trunk.

Breeding takes place from September to December. The nest is a simple scrape, usually in the old nest of another bird, especially the Sickle-billed Vanga. The nest is located in a tree hole or amongst epiphytic growth. Three yellowish eggs are laid.

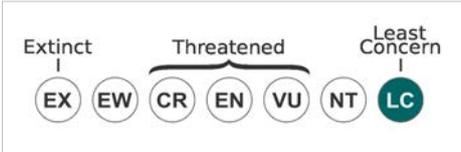
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- Global Raptor Information Network (2007) *Species account: Banded Kestrel *Falco zoniventris**. (<http://www.globalraptors.org/grin/SpeciesResults.asp?specID=8257>) Downloaded from <http://www.globalraptors.org> on 2 Aug. 2007.
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External links

- Banded Kestrel (*Falco zoniventris*) pictures (http://www.kestreling.com/gallery_banded_kestrel.html)

Red-necked Falcon

Red-necked Falcon	
	
<i>Falco chicquera chicquera</i>	
	
<i>Falco chicquera ruficollis</i>	
Conservation status	
	
Least Concern (IUCN 3.1) ^[1]	
Scientific classification	
Kingdom:	Animalia
Phylum:	Chordata
Class:	Aves
Order:	Falconiformes
Family:	Falconidae
Genus:	<i>Falco</i>
Species:	<i>F. chicquera</i>
Binomial name	
<i>Falco chicquera</i> Daudin, 1800	
Subspecies	

1-3, see text.

The **Red-necked Falcon** or **Red-headed Merlin** (*Falco chicquera*) is a bird of prey in the falcon family. This bird is a widespread resident in India and adjacent regions as well as sub-Saharan Africa. It is sometimes called **Turumti** locally.

The Red-necked Falcon is a medium-sized, long-winged species with a bright rufous crown and nape. It is on average 30–36 cm in length with a wingspan of 85 cm. The sexes are similar except in size: males are smaller than females as is usual in falcons. Young birds are buff below with less extensive barring and duller upper plumage.

The adult of the African subspecies *Falco chicquera ruficollis* has a white face apart from black moustachial stripes. The upperparts are pale grey, with black primary wing feathers and tail tip. The underparts are white with dark barring on the underwings, lower breast, belly and undertail. There is a buff foreneck band. The legs and eyering are yellow. The voice of this species is a shrill *kek-kek-kek*.

West African males are known to weigh between 139 and 178 grams, while females are found between 190 and 305 grams. The particularly large African birds from south of the Zambezi River are often separated as subspecies *Falco chicquera horsbrughii*, but the size variation may be clinal and the latter subspecies not valid.

The Asian nominate subspecies *Falco chicquera chicquera* has rufous moustachial stripes, lacks the buff breast band, and is less extensively barred than the African subspecies.

The Red-necked Falcon is of unclear relationships. While it is sometimes allied with the Merlin or the African Hobby, this is most probably not correct. It might actually be distantly related to the Peregrine Falcon but much more study is needed to resolve this problem. In any case, the African and Indian forms are very distinct and have probably been separated for a long time; they might be considered distinct species.^[2]

The Red-necked Falcon is found in semi-desert, savannah and other dry open country with some trees, but also riverine forest. It often perches hidden in the crown of a Borassus palm (*Borassus aethiopicum*), and chases birds, bats and large insects with a fast dashing flight. It is most active at dawn and dusk, hunting below the tree canopy. It often hunts in pairs, sometimes utilizing a technique in which one of the pair flies low and flushes up small birds while the other follows higher up and seizes the prey as it rises from cover.

This falcon reuses the old tree nests of corvids, or lays its 3-5 eggs in the debris in the crown of a palm tree.

Footnotes

[2] Wink *et al.* (1998), Wink & Saurer-Gürth (2000)

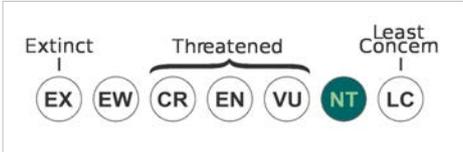
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External links

- Red-necked Falcon - Species text in The Atlas of Southern African Birds (<http://sabap2.adu.org.za/docs/sabap1/178.pdf>).

Red-footed Falcon

Red-footed Falcon	
	
Male (right), female (left), immature (back left)	
Conservation status	
	
Near Threatened (IUCN 3.1) ^[1]	
Scientific classification	
Kingdom:	Animalia
Phylum:	Chordata
Class:	Aves
Order:	Falconiformes
Family:	Falconidae
Genus:	<i>Falco</i>
Species:	<i>F. vespertinus</i>
Binomial name	
<i>Falco vespertinus</i> Linnaeus, 1766	
Synonyms	
<i>Falco vespertinus vespertinus</i> Linnaeus, 1766	

The **Red-footed Falcon** (*Falco vespertinus*), formerly **Western Red-footed Falcon**, is a bird of prey. It belongs to the family Falconidae, the falcons. This bird is found in eastern Europe and Asia although its numbers are dwindling rapidly due to habitat loss and hunting. It is migratory, wintering in Africa. It is a regular wanderer to western Europe, and in August 2004 a Red-footed Falcon was found in North America for the first time on the island of Martha's Vineyard, Massachusetts.



Adult male



Adult female

*Falco vespertinus* – Toulouse Museum, France

The Amur Falcon was formerly included herein as a subspecies but it is nowadays considered well distinct. Nonetheless, it is the present species' closest relative; their relationship to other falcons is more enigmatic. They appear morphologically somewhat intermediate between kestrels and hobbies and DNA sequence data has been unable to further resolve this question, mainly due to lack of comprehensive sampling. They might be closer to the Merlin than to most other living falcons, or more generally related to this species and American falcons such as the American Kestrel and the Aplomado Falcon.^{[2][][]}

It is a medium-small, long-winged species. The adult male is all blue-grey, except for his red undertail and legs; its underwings are uniformly grey. The female has a grey back and wings, orange head and underparts, and a white face with black eye stripe and moustaches.

Young birds are brown above and buff below with dark streaks, and a face pattern like the female. Red-footed Falcons are 28–34 cm (11–13½ in) in length with a wingspan of 65–75 cm (25½–29½ in). The average mass is 155 g (5.5 oz).^[]

This is a diurnal bird of open country with some trees, often near water. Its distinctive method of hunting is shared by the Common Kestrel. It regularly hovers, searching the ground below, then makes a short steep dive towards the target. The Red-footed Falcon's main prey is large insects, but it will also take small mammals and birds.

This falcon is a colonial breeder, reusing the old nests of corvids, such as Rooks. It lays two to four eggs. Its maximum lifespan is 13.25 years in the wild and 18 years in captivity.^[]

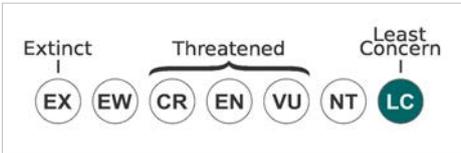
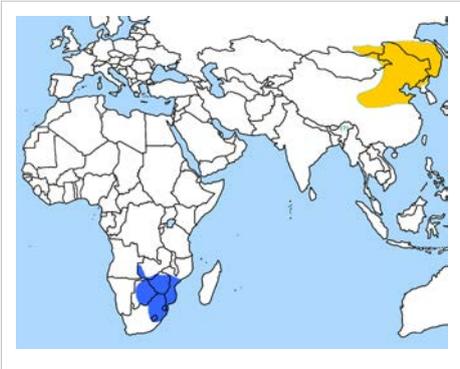
References

- [2] Wink, Michael; Seibold, I.; Lotfikhah, F. & Bednarek, W. (1998): Molecular systematics of holarctic raptors (Order Falconiformes) (<http://www.uni-heidelberg.de/institute/fak14/ipmb/phazb/pubwink/1998/31.1998.pdf>). In: Chancellor, R.D., Meyburg, B.-U. & Ferrero, J.J. (eds.): *Holarctic Birds of Prey*: 29–48. Adenex & WWGBP.

External links

- (Western) Red-footed Falcon – Species text in The Atlas of Southern African Birds (<http://sabap2.adu.org.za/docs/sabap1/179.pdf>).
- Oiseaux (<http://www.oiseaux.net/birds/photos/red-footed.falcon.html>) Photos
- Images at www.naturlichter.com (http://www.naturlichter.de/gallery2/main.php?g2_view=keyalbum.KeywordAlbum&g2_keyword=Rotfußfalke)

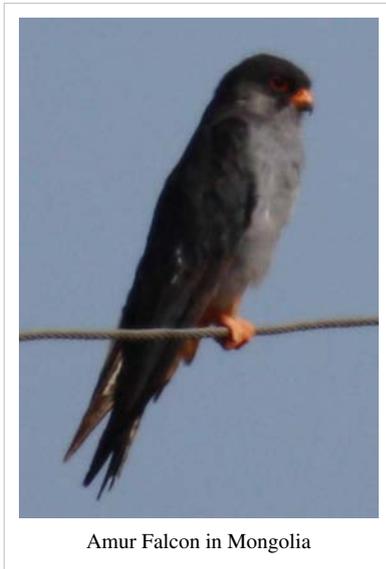
Amur Falcon

Amur Falcon	
	
Conservation status	
	
Least Concern (IUCN 3.1) ^[1]	
Scientific classification	
Kingdom:	Animalia
Phylum:	Chordata
Class:	Aves
Order:	Falconiformes
Family:	Falconidae
Genus:	<i>Falco</i>
Species:	<i>F. amurensis</i>
Binomial name	
<i>Falco amurensis</i> Radde, 1863	
	
Summer	Winter
Synonyms	

Falco vespertinus amurensis Radde, 1863
Falco vespertinus var. *amurensis* Radde, 1863

The **Amur Falcon** (*Falco amurensis*), formerly **Eastern Red-footed Falcon**, is a small raptor of the falcon family. It breeds in south-eastern Siberia and Northern China, wintering in Southern Africa. Its diet consists mainly of insects, such as termites.

Description



Amur Falcon in Mongolia

Males are characteristically dark sooty brown, and may offer confusion with melanistic Gabar Goshawk, but the chestnut on the vent should prevent confusion here. Also there may be some superficial resemblance to Sooty Falcon and Grey Kestrel, but those two species both have yellow feet and cere. Separating male Amur and Red-footed Falcons is best done by the white underwing coverts on Amur Falcon, whereas the underwing of male Red-footed Falcons is uniformly grey.

Females may offer a bit more confusion with a wider range of falcons as they have a typical falcon head pattern. The grey on the top of the head should quickly rule out confusion with Red-footed Falcons. The female has barring on the lower belly. Red cere and feet rule out all other falcons.

For juveniles, red feet should restrict ID to the Amur and Red-footed group, and the darker crown and lack of buff all the way up the belly rules out Western Red-footed Falcon. Females and juveniles lack the buff underwing coverts of Red-footed Falcon.

Taxonomy

It was long considered a subspecies or mere morph of the Red-footed Falcon, but it is nowadays considered well distinct. Nonetheless, it is the Red-footed Falcon's closest relative; their relationship to other falcons is more enigmatic. They appear morphologically somewhat intermediate between kestrels and hobbies and DNA sequence data has been unable to further resolve this question, mainly due to lack of comprehensive sampling. They might be closer to the Merlin than to most other living falcons, or more generally related to this species and American falcons such as the American Kestrel and the Aplomado Falcon.^{[2][[]]}

Relationship with humans

Every year, more than 100,000 Amur Falcons are hunted for food at Nagaland during their passage between breeding and wintering grounds.^[3]

References

- [2] Wink, Michael; Seibold, I.; Lotfikhah, F. & Bednarek, W. (1998): Molecular systematics of holarctic raptors (Order Falconiformes) (<http://www.uni-heidelberg.de/institute/fak14/ipmb/phazb/pubwink/1998/31.1998.pdf>). In: Chancellor, R.D., Meyburg, B.-U. & Ferrero, J.J. (eds.): *Holarctic Birds of Prey*: 29–48. Adenex & WWGBP.
- [3] Shocking Amur Falcon Massacre in Nagaland (<http://www.conservationindia.org/campaigns/amur-massacre>). Conservation India. Retrieved on 2013-03-26.

Identification

- Corso, Andrea and William S. Clark, illustrated by Ian Lewington (1998) Identification of Amur Falcon *Birding World* 11(7):261-8

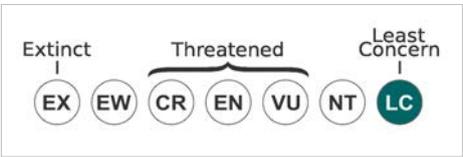
European occurrences

- Corso, Andrea and Pete Dennis (1998) Amur Falcons in Italy – a new Western Palearctic bird *Birding World* 11(7):259-60

External links

- (Eastern Red-footed Falcon =) Amur Falcon – Species text in The Atlas of Southern African Birds (<http://sabap2.adu.org.za/docs/sabap1/180.pdf>).
 - Oiseaux (<http://www.oiseaux.net/birds/photos/amur.falcon.html>) Photos
 - *Falco amurensis* (<http://www.flickr.com/groups/birdguide/pool/tags/Falco+amurensis>) in the Flickr: Field Guide Birds of the World (<http://www.flickr.com/groups/birdguide>)
 -  Media related to *Falco amurensis* at Wikimedia Commons
 -  Data related to *Falco amurensis* at Wikispecies
-

Eleonora's Falcon

Eleonora's Falcon	
	
Eleonoras Falcon	
Conservation status	
	
Least Concern (IUCN 3.1) ^[1]	
Scientific classification	
Kingdom:	Animalia
Phylum:	Chordata
Class:	Aves
Order:	Falconiformes
Family:	Falconidae
Genus:	<i>Falco</i>
Species:	<i>F. eleonorae</i>
Binomial name	
<i>Falco eleonorae</i> Gene, 1839	

Eleonora's Falcon (*Falco eleonorae*) is a medium-sized falcon. It belongs to the hobby group, a rather close-knit number of similar falcons often considered a subgenus *Hypotriorchis*. The Sooty Falcon is sometimes considered its closest relative, but while they certainly belong to the same lineage, they do not seem to be close sister species.^[2] Eleonora's Falcon is named after Eleonor of Arborea, national heroine of Sardinia.^[3]

Taxonomy

Habitat and distribution

This species breeds on islands in the Mediterranean particularly off Greece (where two-thirds of the world's population breeds), but also in the Canary Islands, Ibiza and off Spain, Italy, Croatia, Morocco and Algeria. Tilos Park is the breeding area for ten percent of the world population of Eleonora Falcons. Six hundred and fifty pairs of this species breed on this island according to research conducted by the Hellenic Ornithological Society and the European Union LIFE-Nature program of Tilos. It is rare as a vagrant north of its range.

Morphology

Eleonora's Falcon is an elegant bird of prey, 36–42 cm long with an 87–104 cm wingspan. It is shaped like a large Eurasian Hobby or a small slender Peregrine Falcon, with its long pointed wings, long tail and slim body. There are two colour morphs: The adult dark morph is all sooty brown, with black underwing coverts. The light morph is more like a juvenile Eurasian Hobby, but has buff underparts, and also shows the contrast between the black underwing coverts and paler base to the flight feathers. Young birds are also like a large juvenile Hobby, but the pale underparts contrast with darker wingtips and wing coverts. The call is a typical falcon *kek-kek-kek*.

Migration route

This is a long-distance migrator, wintering in Madagascar. The migration route has been recently discovered and contrary to previous suggestions it has been demonstrated by satellite telemetry to be inland through the African continent. Traditionally it has been suggested to be coastal, with birds from the western end of the Mediterranean flying to Suez before flying south down the Red Sea, and across the Horn of Africa. However, recent satellite tracked animals by Spanish and German researchers have demonstrated an inland route through the Sahara Desert, the equatorial rainforests until reaching Kenya and Mozambique. The total distance covered during the flight has reached up to 9000 km for a single one-way trip.

Feeding habits

It will take large insects, such as dragonflies, which are transferred from talons to beak and eaten in flight. It nests colonially on coastal cliffs, laying up to four eggs. This species has a delayed breeding season, in late summer, because it is a specialist hunter of migrating birds which pass through the Mediterranean islands at this time of year. It captures small birds in flight, using its speed and aerobatic skills. Birds spend much time cruising along coastal cliffs with steady wingbeats watching for tired incoming migrants. (Walter 1979). This falcon is unique in that it is one of the few species that breeds during early autumn, feeding its chicks with other migratory birds that are in abundance that period. It is also one of the few falcon species that creates breeding colonies.

Footnotes

[2] Helbig *et al.* (1994), Wink *et al.* (1998), Retrieved 20 July 2012

[3] Cretan Beaches, "Eleonora's falcon" (<http://www.cretanbeaches.com/en/fauna-of-crete/birds-of-crete/960-eleonora-falcon-falco-eleonorae.html>), Retrieved 20 July 2012

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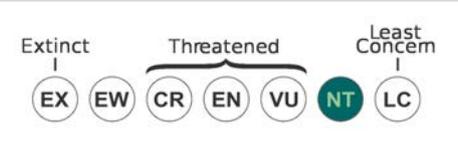
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pubwink/1998/31.1998.pdf)

External links

-  Media related to Falco eleonorae at Wikimedia Commons

Sooty Falcon

Sooty Falcon	
	
Conservation status	
	
Near Threatened (IUCN 3.1) ^[1]	
Scientific classification	
Kingdom:	Animalia
Phylum:	Chordata
Class:	Aves
Order:	Falconiformes
Family:	Falconidae
Genus:	<i>Falco</i>
Species:	<i>F. concolor</i>
Binomial name	
<i>Falco concolor</i> Temminck, 1825	
	

Global range.
Orange dots: Breeding colonies
Blue: Wintering range

The **Sooty Falcon** (*Falco concolor*) is a medium-sized falcon breeding from northeastern Africa to the southern Persian Gulf region. It belongs to the hobby group, a rather close-knit number of similar falcons often considered a subgenus *Hypotriorchis*. Eleonora's Falcon is sometimes considered its closest relative, but while they certainly belong to the same lineage, they do not seem to be close sister species.^[2]

This is an elegant bird of prey, 32–37 cm long with a 78–90 cm wingspan. It is shaped like a large Hobby or a small Eleonora's Falcon, with its long pointed wings, long tail and slim body. The adults are blue-grey, and lack the black underwing coverts of the Eleonora's Falcon. The young bird is like a large juvenile Hobby, or small juvenile Eleonora's Falcon. Its dark trailing edge to the wings and tail distinguish it from the former species, and it lacks the underwing contrast caused by the dark coverts of the larger falcon.

This species breeds on islands and coastal or desert cliffs from Libya to Pakistan). It is a long-distance migrant, wintering in east Africa and south to Madagascar. It is a rare vagrant north of its breeding range.

The Sooty Falcon eats mainly birds, but it will take large insects, such as dragonflies, which are transferred from talons to beak and eaten in flight. It nests on a ledge or on rocks, laying up to four eggs.

It was formerly classified as a Species of Least Concern by the IUCN.^[3] But new research has shown it to be rarer than it was believed. Consequently, it was uplisted to Near Threatened status in 2008.^[4]

Footnotes

[2] Helbig *et al.* (1994), Wink *et al.* (1998)

[3] BLI (2004)

[4] BLI (2008)

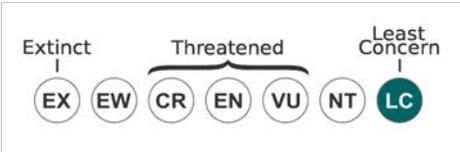
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External links

- Sooty Falcon - Species text in The Atlas of Southern African Birds (<http://sabap2.adu.org.za/docs/sabap1/175.pdf>).

American Kestrel

American Kestrel	
	
Male	
	
Female	
Conservation status	
	
Least Concern (IUCN 3.1) ¹	
Scientific classification	
Kingdom:	Animalia
Phylum:	Chordata
Class:	Aves
Order:	Falconiformes
Family:	Falconidae
Genus:	<i>Falco</i>

Species:	<i>F. sparverius</i>
Binomial name	
<i>Falco sparverius</i> Linnaeus, 1758	
	
American Kestrel range	
Year Round	
Summer (breeding)	
Winter (nonbreeding)	

The **American Kestrel** (*Falco sparverius*), sometimes colloquially known as the *Sparrow Hawk*, is a small falcon, and the only kestrel found in the Americas. It is the most common falcon in North America, and is found in a wide variety of habitats. At 19–21 centimeters (7–8 in) long, it is also the smallest falcon in North America. It exhibits sexual dimorphism in size and plumage, although both sexes have a rufous back with noticeable barring. Juveniles are similar in plumage to adults.



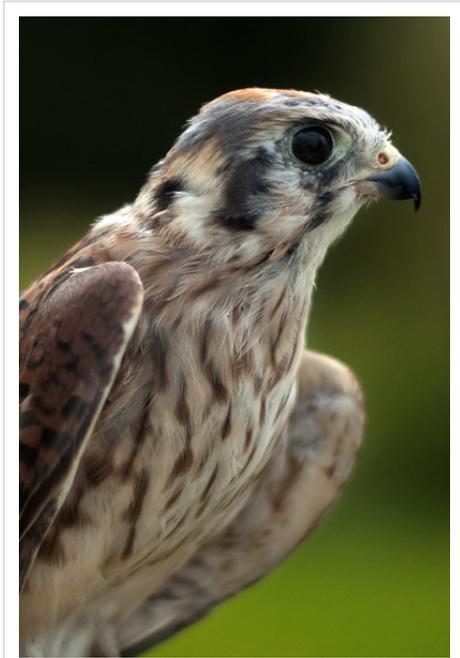
Male upperparts pattern

The American Kestrel hunts by hovering in the air with rapid wing beats or perching and scanning the ground for prey. Its diet typically consists of grasshoppers, lizards, mice, and other small birds. It nests in cavities in trees, cliffs, buildings, and other structures. The female lays three to seven eggs, which both sexes help to incubate. It is a common bird to be used in falconry, especially by beginners.

Its breeding range extends from central and western Alaska across northern Canada to Nova Scotia, and south throughout North America, into central Mexico and the Caribbean. It is a local breeder in Central America and is widely distributed throughout South America. Most birds breeding in Canada and the northern United States migrate south in the winter. It is an occasional vagrant to western Europe.

Description

The American Kestrel is the smallest falcon in North America and, under traditional classification, is the smallest raptor in America.^[1] The American Kestrel is sexually dimorphic, although there is some overlap in plumage coloration between the sexes. The bird ranges from 12 to 27 cm (4.7 to 11 in) in length with a wingspan of 50–61 cm (20–24 in). The female kestrel is larger than the male. The male weighs 80–105 g (2.8–3.7 oz), as opposed to the female which weighs 100–120 grams (3.5–4.2 oz). In standard measurements, the wing bone is 16–21 cm (6.3–8.3 in) long, the tail is 11–15 cm (4.3–5.9 in) and the tarsus is 3.2–4 cm (1.3–1.6 in).^{[2][3]}



Adult female in Winnipeg, Canada

In contrast to many other raptor species, the sexes differ more in plumage than in size. Males have blue-grey wings with black spots and white undersides with black barring. The back is rufous, with barring on the lower half. The belly and flanks are white with black spotting. The tail is also rufous, with a white or rufous tip and a black subterminal band.^[1] The back and wings of the female American Kestrel are rufous with dark brown barring. The undersides of the females are creamy to buff with heavy brown streaking. The tail is noticeably different from the male's, being rufous in color with numerous narrow dark black bars. Juveniles exhibit coloration patterns similar to the adults'.^[1] In both sexes, the head is white with a bluish-grey top. There are also two narrow, vertical black facial markings on each side of the head, while other falcons have one.^[4] Two black spots (ocelli) can be found on each side of the white or orangish nape.^[5] The function of these spots is debated, but the most commonly accepted theory is that they act as "false eyes", and help to protect the bird from potential attackers.^[6] The wings are moderately long, fairly narrow, and taper to a point.

Vocalizations

The American Kestrel has three basic vocalizations – the "klee" or "killy", the "whine", and the "chitter."^[7] The "klee" is usually delivered as a rapid series – *klee, klee, klee, klee* when the kestrel is upset or excited. This call is used in a wide variety of situations and is heard from both sexes, but the larger females typically have lower-pitched voices than the males. The "whine" call is primarily associated with feeding, but is also uttered during copulation. The "chitter" is used in activities which involve interaction between male and female birds, including courtship feeding, copulation, and the feeding of nestlings.^[8] Nestlings can produce calls similar to those of adults at 16 days old.^[9]

Taxonomy

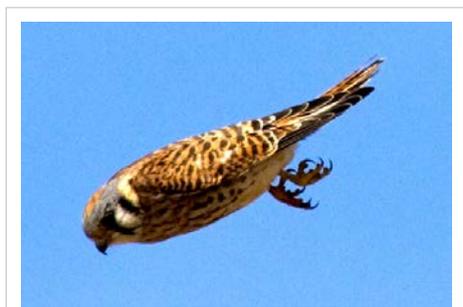
Until the sixth edition of the AOU Checklist of North American Birds was published by the American Ornithologists' Union in 1983, the most commonly used name for the American Kestrel was the *Sparrow Hawk* or *Sparrowhawk*. This was due to a mistaken connection with the Eurasian Sparrowhawk in the genus *Accipiter*. The sixth edition of the AOU Checklist corrected this, officially renaming the bird *American Kestrel*. Several other colloquial names for the kestrel are also in use, including *Grasshopper Hawk*, due to its diet, and *Killy Hawk*, due to its distinct call.^[10]

The American Kestrel's scientific name, *Falco sparverius*, was given by Carolus Linnaeus in his 18th century work *Systema Naturae*.^[11] The genus refers to the falcate, or hooked, shape of the beak, and the specific name means "pertaining to a sparrow", referring to the bird's small size and occasional hunting of sparrows.^[10]

Seventeen subspecies of the American Kestrel are recognized, generally based upon plumage, size, and vocalizations:^[12]

- *F. s. sparverius*, described by Linnaeus in 1758, is the nominate subspecies. It is found in most of the United States, Canada, and Mexico.
- *F. s. paulus*, described by Howe and King in 1902, is found in the Southeast United States, from Louisiana to Florida.
- *F. s. peninsularis*, described by Mearns in 1892, is found in southern Baja California.
- *F. s. tropicalis*, described by Griscom in 1930, is found from southern Mexico to northern Honduras.
- *F. s. nicaraguensis*, described by Howell in 1965, is found in Honduras and Nicaragua.
- *F. s. sparveroides*, described by Vigors in 1827, is found in Cuba and the Isle of Youth, and southern to central Bahamas.
- *F. s. dominicensis*, described by Gmelin in 1788, is found in Hispaniola.
- *F. s. caribaeorum*, described by Gmelin in 1788, is found in Puerto Rico through the Lesser Antilles to Grenada.
- *F. s. brevipennis*, described by Berlepsch in 1892, is found in the Netherlands Antilles.
- *F. s. isabellinus*, described by Swainson in 1837, is found from Venezuela to northern Brazil.
- *F. s. ochraceus*, described by Cory in 1915, is found in eastern Colombia and northwest Venezuela.
- *F. s. cauae*, described by Chapman in 1915, is found in western Colombia.
- *F. s. aequatorialis*, described by Mearns in 1892, is found in northern Ecuador.
- *F. s. peruvianus*, described by Cory in 1915, is found in southwest Ecuador, Peru, and northern Chile.
- *F. s. fernandensis*, described by Chapman in 1915, is found on the Juan Fernández Islands off Chile.
- *F. s. cinnamominu*, described by Swainson in 1837, is found in Peru, Chile, and Argentina.
- *F. s. cearae*, described by Cory in 1915, is found from northeast Brazil south to eastern Bolivia.

Ecology and behavior



Female about to pounce

American Kestrels are found in a wide variety of habitats, including grasslands, meadows, deserts, and other open to semiopen regions. They can also be found in both urban and suburban areas. A kestrel's habitat must include perches, open space for hunting, and cavities for nesting (whether natural or man-made).^[13] The American Kestrel is able to live in very diverse conditions, ranging from above the Arctic Circle,^[14] to the tropics of Central America, to elevations of over 4,500 meters (14,764 ft) in the Andes Mountains.^[15] The bird is distributed from northern Canada and Alaska to the southernmost tip of South America, Tierra del Fuego. It is the only kestrel found in the

Americas.^[1] It has occurred as a vagrant in the UK, Denmark, Malta and the Azores.^[1]

American Kestrels in Canada and the northern United States typically migrate south in the winter, sometimes going as far as Central America and the Caribbean. Birds that breed south of about 35 degrees north latitude are usually year-round residents. Migration also depends on local weather conditions.^[16] Wintering kestrels' choice of habitat varies by sex. Females are found in open areas more often than males during the non-breeding season. A common explanation for this behavior is that the larger females arrive at the preferred habitat first and exclude males from their territory.^[17]

The American Kestrel is not long-lived, with a lifespan of <5 years for wild birds.^[1] The oldest banded wild bird was 11 years and 7 months,^[18] while captive kestrels can live up to 14–17 years.^[1] In a study, humans accounted for 43.2% of 1,355 reported deaths, which included direct killing and roadkills, while predation (including by larger birds of prey) accounted for 2.8%. This statistic is likely biased, however, as reported deaths are usually found near or in areas populated by humans.^[1]

Feeding

American Kestrels feed largely on small animals such as grasshoppers, dragonflies, lizards, mice, and voles. They will occasionally eat other small birds. The kestrel has also been reported to have killed larger animals such as snakes, bats, and squirrels.^[19] The kestrel maintains high population densities, in part because of the broad scope of its diet. The American Kestrel's primary mode of hunting is by perching and waiting for prey to come near. The bird is characteristically seen along roadsides or fields perched on objects such as trees, overhead power lines, or fence posts. It also hunts by hovering in the air with rapid wing beats and scanning the ground for prey. Other hunting techniques include low flight over fields, or chasing insects in the air.^[20]



Female eating a dead bird in California

Prey is almost always caught on the ground. Before striking, the kestrel characteristically bobs its head and tail, then makes a direct flight toward the prey to grab it in its talons. During the breeding season, the bird will carry large prey back to its mate or young. One study found that an American Kestrel pair "foraged in ways that minimized the costs of energy acquisition in its particular situation". For example, if the success rate for catching prey decreases significantly in a particular area, the bird will move to a different area.^[21]



A young bird in the sun

Reproduction

American Kestrels are sexually mature by their first spring.^[22] In migratory populations, the males arrive at the breeding ground before females, then the female selects a mate. Pair bonds are strong, often permanent. Pairs usually use previous nesting sites in consecutive years. This gives birds an advantage over younger or invading individuals, as they would already be familiar with the hunting grounds, neighbors, predators, and other features of the site.^[23] Males perform elaborate dive displays to advertise their territory and attract a

mate. These displays consist of several climbs and dives, with three or four "klee" calls at their peaks. Females are promiscuous for about one to two weeks after their arrival at the nesting site. This is thought to stimulate ovulation.^[24] Food transfers from the male to the female occur from about four to five weeks prior to egg laying to one to two weeks after.^[25]

American Kestrels are cavity nesters, but they are able to adapt to a wide variety of nesting situations. They generally prefer natural cavities (such as in trees) with closed tops and tight fitting entrances, as to provide for

maximum protection of the eggs and young.^[26] Kestrels occasionally nest in holes created by large woodpeckers,^[27] or use the abandoned nests of other birds, such as Red-tailed Hawks, Merlins, and crows.^[28] They have been recorded nesting on cliff ledges and building tops, as well as in abandoned cavities in cactuses.^[29] American Kestrels also commonly utilize nesting boxes.^[30]

Three to seven eggs (typically four or five) are laid approximately 24–72 hours apart. The average egg size is 32 mm by 29 mm, 10% larger than average for birds of its body size. The eggs are white to cream in color with brown or grey splotching. Incubation usually lasts 30 days and is mainly the responsibility of the female, although the male incubates 15–20% of the time. Eggs which are lost are typically replaced in 11–12 days. Hatching takes place over three to four days. Hatchlings are altricial, and are only able to sit up after five days. They grow very quickly, reaching an adult weight after 16–17 days. After 28–31 days, their wings develop and they are able to leave the nest.^[31]

Status and conservation

The American Kestrel is likely the most abundant falcon in North America, although its total population is difficult to quantify, as local populations can change quickly due to resource availability. Count data from the USGS Breeding Bird Survey (BBS) indicate that the North American breeding population is experiencing long-term and gradual but sustained declines, with some regions, such as New England and coastal California, exhibiting more rapid declines.^{[32][33]} Count data from raptor migration corridors also indicate regional population declines and largely corroborate BBS data.^[34] The North American population has been estimated at 1.2 million pairs, with the Central and South American populations being as large. A smaller estimate is 236,000 birds wintering in North America. A population increase occurred in the 18th and 19th centuries, probably due to deforestation for agriculture. The resulting pastures provided an ideal habitat for kestrels.^[1]

The southeastern U.S. subspecies (*Falco sparverius paulus*) has declined 82% since 1940 due to a decrease in nest site availability. This decline is a result of Longleaf Pines being cleared from agricultural fields.^[35] Despite this, the American Kestrel is classed as Least Concern on the IUCN Red List.^[1]

The Peregrine Fund, a leading non-profit organization advancing research and conservation of birds of prey worldwide, launched the American Kestrel Partnership in 2012.^[1] The American Kestrel Partnership developed and maintains a web-based network for citizen and professional scientists to enter, manage, and consolidate data from kestrel nestbox monitoring programs in the Western Hemisphere. The database is being used by researchers to model and understand relationships between kestrel nesting parameters (e.g., phenology, occupancy, survival, productivity, and nestling weight and exposure to environmental toxins) and environmental factors, such as land use, landscape composition and configuration, climate conditions (e.g., drought), and point sources of environmental toxins. The American Kestrel Partnership's website, with support from the Cornell Laboratory of Ornithology, features two live, streaming video feeds from a kestrel nestbox and breeding pair on The Peregrine Fund's campus in Boise, Idaho.^[1]



Male with handler, San Diego Zoo

Relationship with humans

One important use of American Kestrels is in falconry. Although most falconers prefer larger birds such as Peregrine Falcons and Northern Goshawks when hunting, kestrels can be used to catch small birds, insects, and rodents. American Kestrels are also often used in scientific studies, because they can be bred easily in captivity. By artificially manipulating the daylight hours in captivity, scientists have bred them more than once a year.^[36]

Migratory raptors native to the United States are protected by the Migratory Bird Treaty Act of 1918, so American Kestrels are illegal to possess without a permit in the United States, Canada, and Mexico.^[37]

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- [3] American Kestrel, Life History, All About Birds – Cornell Lab of Ornithology (http://www.allaboutbirds.org/guide/american_Kestrel/lifehistory). Allaboutbirds.org. Retrieved on 2013-02-25.
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- [5] Clark & Wheeler (2001), p. 252
- [8] Wauer (2005), pp. 11–12
- [10] Wauer (2005), p. 4
- [14] Wauer (2005), p. 15
- [15] Fjeldså & Krabbe (1990), p. 112
- [16] Wauer (2005), pp. 23–24
- [23] Wauer (2005), p. 52
- [24] Wauer (2005), p. 54
- [26] Wauer (2005), p. 55
- [28] Wauer (2005), pp. 55–56
- [31] Wauer (2005), pp. 59–63
- [36] Wauer (2005), pp. 75–76

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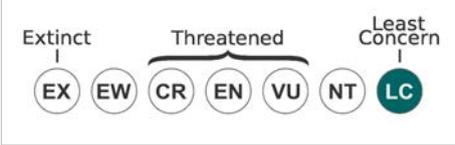
External links

- American Kestrel Partnership, The Peregrine Fund (<http://kestrel.peregrinefund.org/index.php>) Research and conservation activities designed for participants of all ages
- KestrelCams, American Kestrel Partnership, The Peregrine Fund (<http://kestrel.peregrinefund.org/index.php?action=webcams>) Live, streaming video of a nesting kestrel pair
- All About Birds, Cornell Laboratory of Ornithology (http://www.allaboutbirds.org/guide/american_Kestrel/id) Natural history information
- Internet Bird Collection (<http://ibc.lynxeds.com/species/american-kestrel-falco-sparverius>) Videos
- USGS Patuxent Bird Identification InfoCenter (<http://www.mbr-pwrc.usgs.gov/id/framlst/i3600id.html>)
- VIREO (<http://vireo.acnatsci.org/search.html?Form=Search&SEARCHBY=Common&KEYWORDS=american+kestrel&showwhat=images&AGE=All&SEX=All&ACT=All&Search=Search&>)

VIEW=All&ORIENTATION=All&RESULTS=24) photo gallery

- American Kestrel (<http://museum.gov.ns.ca/mnh/nature/nsbirds/bns0098.htm>), Birds of Nova Scotia.

Aplomado Falcon

Aplomado Falcon	
	
Conservation status	
	
Least Concern (IUCN 3.1) ¹	
Scientific classification	
Kingdom:	Animalia
Phylum:	Chordata
Class:	Aves
Order:	Falconiformes
Family:	Falconidae
Genus:	<i>Falco</i>
Species:	<i>F. femoralis</i>
Binomial name	
<i>Falco femoralis</i> Temminck, 1822	
Synonyms	
See text.	

The **Aplomado Falcon** (*Falco femoralis*) is a medium-sized falcon of the Americas. The species' largest contiguous range is in South America, but not in the deep interior Amazon Basin. It was long known as *Falco*

fusco-coerulescens or *Falco fuscoerulescens*, but these names are now believed to refer to the Bat Falcon (*F. ruficularis*).^[1] Its resemblance in shape to the hobbies accounts for its old name **Orange-chested Hobby**. *Aplomado* is an unusual Spanish word for "lead-colored", referring to the blue-grey areas of the plumage – an approximate English translation would be "leaden falcon". Spanish names for the species include *halcón aplomado* and *halcón fajado* (roughly "banded falcon" in reference to the characteristic pattern); in Brazil it is known as *falcão-de-coleira*.

Description



Illustration from Pacific Railroad Surveys

The Aplomado Falcon is very slender, long-winged, and long-tailed, the size of a small Peregrine Falcon (*F. peregrinus*), at 12–16 in (30–40 cm) long and with an average wingspan of about 36 in (90 cm), but only half the weight, at about 7.3–10.8 oz (208–305 g) in males and 9.6–16 oz (271–460 g) in females.^[1] In adult birds, the upperparts are dark blue-grey, as is much of the head, with the usual falcon "moustache" contrasting sharply with the white throat and eyestripe. The upper breast continues the white of the throat; there are black patches on each side of the lower breast that meet in the middle; the belly and thighs, below the black patches, are light cinnamon. The tail is black with narrow white or grey bars and a white tip. The cere, eye-ring, and feet are yellow or yellow-orange.^[1]

Except that females are bigger than males, the sexes are similar. Juvenile birds are very similar to adults, but their upperparts and belly band are blackish brown, the chest is streaked with black, the white on the head and breast is buffy, and the cinnamon on the underparts is

paler, as are the feet.^[1]

This species may be confused with the Bat Falcon (*F. ruficularis*) and the Orange-breasted Falcon (*F. deiroleucus*), which have similar white-black-rust patterns below, but those species are built more like Peregrine Falcons and have solidly blackish heads and darker rufous bellies.^[1] These two species are generally considered to belong to the same lineage as the Aplomado Falcon. Two other *Falco* species of the Americas, Merlin (*F. columbarius*) and American Kestrel (*F. sparverius*), seem to be closer to the Aplomado group than most other falcons, but the relationships of all these lineages are fairly enigmatic. All that can be said with some certainty is that they diverged as part of an apparently largely western Holarctic radiation in the Late Miocene, probably around 8 to 5^[2] million years ago.^{[1][3][4]}

Range, ecology and status

The Aplomado Falcon's habitat is dry grasslands, savannahs, and marshes. It ranges from northern Mexico and Trinidad locally to southern South America, but has been extirpated from many places in its range, including all of northern and central Mexico except for a small area of Chihuahua. Globally, however, it is so widespread that it is assessed as Species of Least Concern by the IUCN.^[1]

It feeds on large invertebrates and small vertebrates, with small birds making up the overwhelming bulk of its prey. Mixed-species feeding flocks in open cerrado and grassland will go on frenzied alert upon spotting this species; small birds fear it more than most other predators.^[1] It is often seen soaring at twilight hunting insects and eating them on the wing.^[1] It also hunts at fields being burned, at which many birds of this species may gather; cooperation between individual Aplomado Falcons – usually members of a pair – has also been recorded. In Brazil, Aplomado Falcons have been observed following Maned Wolves (*Chrysocyon brachyurus*) and chasing birds that the wolves flush.^[1] Prey items typically weigh one-fifth to one-half of the falcons' own weight, but females of this species (which

due to their size can tackle larger prey) have been recorded eating birds larger than themselves, such as a Cattle Egret (*Bulbucus ibis*) or a Plain Chachalaca (*Ortalis vetula*), on rare occasions.^[1]



Aplomado Falcon at the THA Meet '09

The nest is a platform built of sticks at any height in a bush or tree. Two or three eggs are laid.^[1]

Until the 1950s it was found in the extreme southwestern United States, and reintroduction efforts are under way in Western and Southern Texas. It began to reoccupy its former range in West Texas and southern New Mexico in the 1990s.^[1] Documentary evidence for these naturally occurring birds was obtained in New Mexico in 1991, and sightings built steadily through that decade and the next, leading to successful fledging of three young in 2002.^[5] Sightings and nesting activity continue to the present.

The expansion of the reintroduction program to that area has met with criticism, because technically, all Aplomado Falcons in New Mexico are classified as part of the "experimental" (reintroduction)

population.^[6] As such, while they are still legally protected from hunting, they are not protected by Endangered Species Act requirements to preserve habitat and the like. It is believed that mainly habitat destruction caused the species' (near-)disappearance from the US and hinders reestablishment of a wild breeding population. A coalition of environmental groups is attempting to have full protection restored so as not to jeopardize the success of the expanding wild population and the reintroduction efforts.^[7]

Falconry

Similar to the Merlin, the Aplomado Falcon will chase after game such as small birds and quail, by pursuit flight, which is flying after quarry flushed out. It is mainly acquired from breeders because of its scarcity in the United States, and many falconers in Europe will buy a pair for about £4000. It's admired for its accipiter-like hunting style, which has made the bird famous for being more like an accipiter than a falcon. This is also shown through its determination to catch the quarry even going into heavy cover. They are ideal for quail, doves, and will sometimes even go after squirrel or rabbits. Unfortunately, these birds are also known for carrying their game, like many small falcons, where they try and fly away from the falconer with their catch.

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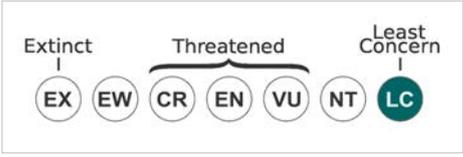
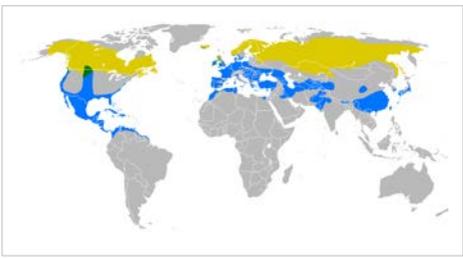
Further reading

- Stiles, F. Gary & Skutch, Alexander Frank (1989): *A guide to the birds of Costa Rica*. Comstock, Ithaca. ISBN 0-8014-9600-4

External links

- Page on the Aplomado Falcon from the Peregrine Fund (http://www.peregrinefund.org/Explore_Raptors/falcons/aplomado.html) with photographs
- ITIS (http://www.itis.usda.gov/servlet/SingleRpt/SingleRpt?search_topic=TSN&search_value=175610)
- Aplomado Falcon photo gallery (<http://vireo.acnatsci.org/search.html?Form=Search&SEARCHBY=Common&KEYWORDS=aplomado+falcon&showwhat=images&AGE=All&SEX=All&ACT=All&Search=Search&VIEW=All&ORIENTATION=All&RESULTS=24>) VIREO
- Aplomado Falcon videos (<http://ibc.hbw.com/ibc/phtml/especie.phtml?idEspecie=849>) on the Internet Bird Collection
- (<http://falconers.com/articles/aplomado/>) Falconry
- (<http://www.themodernapprentice.com/aplomado.htm>) Falconry 2

Merlin (bird)

Merlin	
	
Male Prairie Merlin (<i>F. c. richardsoni</i>) with prey in Alberta (Canada)	
Conservation status	
	
Least Concern (IUCN 3.1) [ⓘ]	
Scientific classification	
Kingdom:	Animalia
Phylum:	Chordata
Class:	Aves
Order:	Falconiformes
Family:	Falconidae
Genus:	<i>Falco</i>
Species:	<i>F. columbarius</i>
Binomial name	
<i>Falco columbarius</i> Linnaeus, 1758	
Diversity	
3–9 subspecies (see text)	
	
Yellow: summer only. Green: all year. Blue: winter only.	

Synonyms
<i>Aesalon columbarius</i> (Linnaeus, 1758)
<i>Falco aesalon</i> Tunstall, 1771 (but see text)

The **Merlin** (*Falco columbarius*) is a small species of falcon from the Northern Hemisphere. A bird of prey once known colloquially as a **pigeon hawk** in North America,^[1] the Merlin breeds in the northern Holarctic; some migrate to subtropical and northern tropical regions in winter.

European and North American variants

Some regard the North American and Eurasian (*F. columbarius*) populations as two distinct species. The first modern taxonomist to describe the Merlin was Carl Linnaeus, a Swede who reported his type specimen came from America. Thirteen years after Linnaeus's description Marmaduke Tunstall recognized the Eurasian birds as a distinct taxon *aesalon* in his *Ornithologica Britannica*. If two species of Merlins are recognized, the Old World birds would thus bear the scientific name *F. aesalon*.^{[1][2]}

Description



Juvenile, *F. c. columbarius*

The Merlin is 24–33 cm (9.4–13 in) long with a 50–73 cm (20–29 in) wingspan.^[3] Compared to most other small falcons, it is more robust and heavily built. Males average at about 165 g (5.8 oz) and females are typically about 230 g (8.1 oz). There is considerable variation, however, throughout the birds' range and—in particular in migratory populations—over the course of a year. Thus, adult males may weigh 125–210 g (4.4–7.4 oz), and females 190–300 g (6.7–11 oz).^[3] Each wing measures 18.2–23.8 cm (7.2–9.4 in), the tail measures 12.7–18.5 cm (5.0–7.3 in) and the tarsus measures 3.7 cm (1.5 in).^[3] Such sexual dimorphism is common among raptors; it allows males and females to hunt different prey animals and decreases the territory size needed to feed a mated pair.^{[1][4]}

The male Merlin has a blue-grey back, ranging from almost black to silver-grey in different subspecies. Its underparts are buff- to orange-tinted and more or less heavily streaked with black to reddish

brown. The female and immature are brownish-grey to dark brown above, and whitish buff spotted with brown below. Besides a weak whitish supercilium and the faint dark malar stripe—which are barely recognizable in both the palest and the darkest birds—the face of the Merlin is less strongly patterned than in most other falcons. Nestlings are covered in pale buff down feathers, shading to whitish on the belly.^[4]



Upperside pattern of male (presumably *F. c./a. pallidus*) wintering in Little Rann of Kutch, Gujarat, India

The remiges are blackish, and the tail usually has some 3–4 wide blackish bands, too. Very light males only have faint and narrow medium-grey bands, while in the darkest birds the bands are very wide, so that the tail appears to have narrow lighter bands instead. In all of them, however, the tail tip is black with a narrow white band at the very end, a pattern possibly plesiomorphic for all falcons. Altogether, the tail pattern is quite distinct though, resembling only that of the Aplomado Falcon (*F. berigora*) and (in light Merlins) some typical kestrels. The eye and beak are dark, the latter with a yellow cere. The feet are also yellow, with black claws.^[4]

Light American males may resemble the American Kestrel (*F. sparverius*, not a typical kestrel), but merlin males have a grey back and tail rather than the reddish-brown of the kestrels. Light European males can be distinguished from kestrels by their mainly brown wings. In the north of South Asia, wintering males may be confused with the Red-necked Falcon (*F. chicquera*) if they fly away from the observer and the head (red on top in *F. chicquera*) and underside (finely barred with black in *F. chicquera*) are not visible.^[4]

Systematics

The relationships of the Merlin are not resolved to satisfaction. In size, shape and coloration, it is fairly distinct among living falcons. The Red-necked Falcon is sometimes considered more closely related to the Merlin than other falcons, but this seems to be a coincidence due to similar hunting habits; it could not be confirmed in more recent studies. Indeed, the Merlin seems to represent a lineage distinct from other living falcons since at least the Early Pleistocene, some 5 Ma (million years ago). As suggested by biogeography and DNA sequence data, it might be part of an ancient non-monophyletic radiation of *Falcos* from Europe to North America, alongside the ancestors of forms such as the American Kestrel (*F. sparverius*), and the Aplomado Falcon (*F. femoralis*) and its relatives. A relationship with the Red-necked Falcon (*F. chicquera*) was once proposed based on their phenetic similarity, but this is not considered likely today.^{[5][1][2][3]}

In that regard, it is interesting to note a fossil falcon from the Early Blancan (4.3–4.8 Ma)^[17] Rexroad Formation of Kansas. Known from an almost complete right coracoid (specimen UMMP V29107) and some tarsometatarsus, tibiotarsus and humerus pieces (V27159, V57508-V57510, V57513-V57514), this prehistoric falcon was slightly smaller than a Merlin and apparently a bit more stout-footed, but otherwise quite similar. It was part of the Fox Canyon and Rexroad Local Faunas, and may have been the ancestor of the living Merlins or its close relative. With its age quite certainly pre-dating the split between the Eurasian and North American Merlins, it agrees with the idea of the Merlin lineage originating in North America, or rather the colonization thereof. After adapting to its ecological niche, ancient Merlins would have spread to Eurasia again, with gene flow being interrupted as the Beringia and Greenland regions became icebound in the Quaternary glaciation.^{[18][5][2]}



European subspecies *aesalon*. Adult male (front) and female (behind)

Subspecies

That the Merlin has a long-standing presence on both sides of the Atlantic is evidenced by the degree of genetic distinctness between Eurasian and North American populations. Arguably, they might be considered distinct species, with gene flow having ceased at least a million years ago, but probably more.^[2]

By and large, color variation in either group independently follows Gloger's Rule. The Pacific temperate rain forest subspecies *suckleyi*'s males are almost uniformly black on the upperside and have heavy black blotches on the belly, whereas those of the lightest subspecies, *pallidus*, have little non-dilute melanin altogether, with grey upperside and reddish underside pattern.^[1]

American group^[1]

- *Falco columbarius columbarius* Linnaeus, 1758 – **Taiga Merlin, Tundra Merlin**

Canada and northernmost USA east of Rocky Mountains, except Great Plains. Migratory, winters in S North America, Central America, the Caribbean, and N South America from the Guyanas to the northern Andes foothills. Rarely winters in the northern USA.^{[1][6]}

- *Falco columbarius richardsoni* Ridgway, 1871 – **Prairie Merlin**

Great Plains from Alberta to Wyoming. Resident (some winter dispersal).

- *Falco columbarius suckleyi* Ridgway, 1873 – **Coastal Forest Merlin, Black Merlin**

Pacific coast of North America, from S Alaska to N Washington state. Resident (some altitudinal movements).

Eurasian group^[1]

- *Falco columbarius/aesalon aesalon* Tunstall, 1771

Northern Eurasia from British Isles through Scandinavia to central Siberia. Population of northern Britain shows evidence of gene flow from *subaesalon*. British Isles population resident, rest migratory; winters in Europe and the Mediterranean region to about Iran.

- *Falco columbarius/aesalon subaesalon* C.L. Brehm, 1827 – *smyril* (Faroese), *smyrill* (Icelandic)

Iceland and Faroe Islands. Latter population has some gene flow with *aesalon*. Resident (some winter dispersal).

- *Falco columbarius/aesalon pallidus* (Sushkin, 1900)

Asian steppes between Aral Sea and Altay Mountains. Migratory, winters in S Central Asia and N South Asia.

- *Falco columbarius/aesalon insignis* (Clark, 1907)

Siberia between Yenisei and Kolyma Rivers. Migratory, winters in continental East Asia.

- *Falco columbarius/aesalon lymani* Bangs, 1913

Mountains of eastern Kazakhstan and surrounding countries. Short-distance migrant.

- *Falco columbarius/aesalon pacificus* (Stegmann, 1929)

Russian Far East to Sakhalin. Migratory, winters in Japan, Korea and nearby.



Presumably Coastal Forest Merlin (*F. c. suckleyi*), Potter Marsh, Anchorage (Alaska, USA)



Male (presumably *F. c./a. pallidus*) wintering in Little Rann of Kutch (Gujarat, India)

Ecology

Merlins inhabit fairly open country, such as willow or birch scrub, shrubland, but also taiga forest, parks, grassland such as steppe and prairies, or moorland. They are not very habitat-specific and can be found from sea level to the treeline. In general, they prefer a mix of low and medium-height vegetation with some trees, and avoid dense forests as well as treeless arid regions. During migration however, they will utilize almost any habitat.^[1]

Most of its populations are migratory, wintering in warmer regions. Northern European birds move to southern Europe and North Africa, and North American populations to the southern USA to northern South America. In the milder maritime parts of its breeding range, such as Great Britain, the Pacific Northwest and western Iceland, as well as in Central Asia, it will merely desert higher ground and move to coasts and lowland during winter. The migration to the breeding grounds starts in late February, with most birds passing through the USA, Central Europe and southern Russia in March and April, and the last stragglers arriving in the breeding range towards the end of May. Migration to winter quarters at least in Eurasia peaks in August/September, while e.g. in Ohio, just south of the breeding range, *F. c. columbarius* is typically recorded as a southbound migrant as late as September/October.^{[1][6]}

In Europe, Merlins will roost communally in winter, often with Hen Harriers (*Circus cyaneus*). In North America, communal roosting is rare, and Merlins are well known for fiercely attacking any birds of prey that they encounter, even adult eagles.



F. c. columbarius hunting a Northern Blue Jay (*Cyanocitta cristata bromia*), Mount Auburn Cemetery, Massachusetts (USA)

Merlins rely on speed and agility to hunt their prey. They often hunt by flying fast and low, typically less than 1 metre above the ground, using trees and large shrubs to take prey by surprise. But they actually capture most prey in the air, and will "tail-chase" startled birds. Throughout its native range, the Merlin is one of the most able aerial predators of small to mid-sized birds, more versatile if anything than the larger hobbies (which prefer to attack in mid-air) and the more nimble sparrowhawks (which usually go for birds resting or sleeping in dense growth). Breeding pairs will frequently hunt cooperatively, with one bird flushing the prey toward its mate.^{[7][1]}

The Merlin will readily take prey that is flushed by other causes, and can for example be seen tagging along Sharp-shinned Hawks (*Accipiter striatus*) to catch birds that escape from this ambush predator into the open air. It is quite unafraid, and will readily attack anything that moves conspicuously. Merlins have even been observed trying to "catch" automobiles and trains, and to feed on captive birds such as those snared in the mist nets used by ornithologists. Even under adverse conditions, one in 20 targets is usually caught, and under good conditions almost every other attack will be successful. Sometimes, Merlins cache food to eat it later.^[1]

In particular during the breeding season, most of the prey are smallish birds weighing 10–40 g (0.35–1.4 oz). Almost any such species will be taken, with local preferences for whatever is most abundant—be it larks (*Alaudidae*), pipits (*Anthus*) or House Sparrows (*Passer domesticus*)—and inexperienced yearlings always a favorite. Smaller birds will generally avoid a hunting Merlin if possible. Even in the Cayman Islands (where it only occurs in winter), Bananaquits were noted to die of an apparent heart attack or stroke, without being physically harmed, when a Merlin went at them and they could not escape.^[1]

Larger birds (e.g. sandpipers, flickers^[8] and even Rock Pigeons^[9] as heavy as the Merlin itself) and other animals—insects (especially dragonflies and moths), small mammals (especially bats and voles) and reptiles—complement its diet. These are more important outside the breeding season, when they can make up a considerable part of the Merlin's diet. But for example in Norway, while small birds are certainly the breeding Merlin's staple food, exceptional breeding success seems to require an abundance of *Microtus* voles.^[1]

Corvids are the primary threat to eggs and nestlings. Adult Merlins may be preyed on by larger raptors, especially Peregrine Falcons (*F. peregrinus*), eagle-owls (e.g., Great Horned Owl, *Bubo virginianus*), and larger *Accipiter*

hawks (e.g., Northern Goshawk, *A. gentilis*). In general however, carnivorous birds avoid Merlins due to their aggressiveness and agility.

Reproduction

Breeding occurs typically in May/June. Though the pairs are monogamous at least for a breeding season, extra-pair copulations have been recorded. Most nest sites have dense vegetative or rocky cover; the Merlin does not build a proper nest of its own. Most will use abandoned corvid (particularly *Corvus* crow and *Pica* magpie) or hawk nests which are in conifer or mixed tree stands. In moorland—particularly in the UK—the female will usually make a shallow scrape in dense heather to use as a nest. Others nest in crevices on cliff-faces and on the ground, and some may even use buildings.^[1]

Three to six (usually 4 or 5) eggs are laid. The rusty brown eggs average at about 40 mm × 31.5 mm (1.6 in × 1.24 in). The incubation period is 28 to 32 days. Incubation is performed by the female to about 90%; the male instead hunts to feed the family.

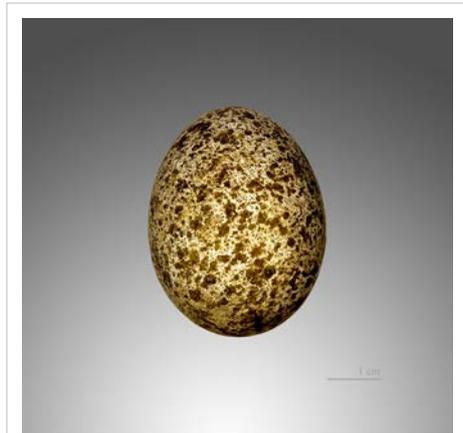
Hatchlings weigh about 13 g (0.46 oz). The young fledge after another 30 days or so, and are dependent on their parents for up to 4 more weeks. Sometimes first-year Merlins (especially males) will serve as a "nest helper" for an adult pair. More than half—often all or almost all—eggs of a clutch survive to hatching, and at least two-thirds of the hatched young fledge. However, as noted above, in years with little supplementary food only one young in 3 may survive to fledging. The Merlin becomes sexually mature at one year of age and usually attempts to breed right away. The oldest wild bird known as of 2009 was recorded in its 13th winter.^{[1][10]}

Relationship with humans

In medieval Europe, Merlins were popular in falconry: the Book of St. Albans listed it as " the falcon for a lady ". Today, they are still occasionally trained by falconers for hunting smaller birds, but due to conservation restrictions this is not very common any more.

John James Audubon illustrated the Merlin in the second edition of *Birds of America* (published in London, 1827–38) as Plate 75, under the title, "Le Petit Caporal – *Falco temerarius*". The image was engraved and colored by Robert Havell's London workshops. The original watercolor by Audubon was purchased by the New York History Society Wikipedia:Verifiability, where it remains as of January 2009.

William Lewin illustrates the Merlin as Plate 22 in volume 1 of his *Birds of Great Britain and their Eggs*, published 1789 in London.



Falco columbarius



Nestlings

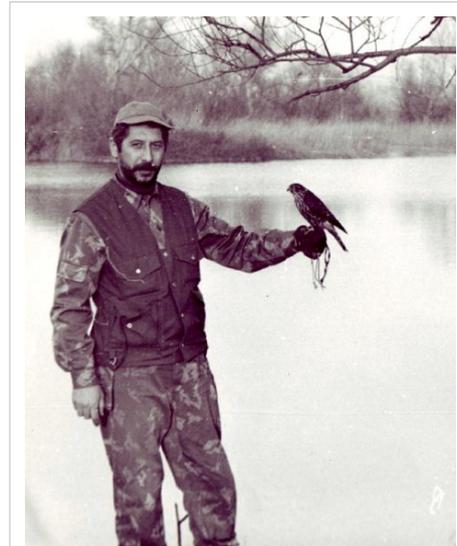


A male *smyril* is featured on this Faroese stamp by Edward Fuglø

Status and conservation

Altogether, the Merlin is not particularly rare, and due to this and its wide range it is considered a Species of Least Concern by the IUCN. Its numbers are—except in the Asian part of its range, where the situation is less well determined—regularly censused. In about every major country it inhabits, many hundreds to many thousands are found, ranging from a "mere" 250-300 pairs in Belarus to perhaps as many as 30,000 pairs of *aesalon* in European Russia as determined in 1993. It is listed on CITES Appendix II and on a local level protected as other birds of prey; while some countries allow to capture Merlins, e.g. for falconry, international trade requires an export permit.^{[1][]}

By far the most serious long-term threat to these birds is habitat destruction, especially in their breeding areas. Ground-nesting populations in moorland have a preference for tall heather, and are thus susceptible to overmanagement by burning vast tracts instead of creating a habitat mosaic containing old and new growth. Still, the Merlin is rather euryoecious and will even live in settled areas, provided they have the proper mix of low and high vegetation, as well as sufficient prey (which is usually the case) and nesting sites (which is a common limiting factor).^[1]



Hunter with trained Merlin, Jandari Lake,
Georgia, November 1979

In North America, the species seems to have been more widespread in the past, or perhaps its range has shifted northwards: *F. c. columbarius* was an uncommon breeding bird in Ohio before the 20th century, but e.g. in Seneca County, as early as the 1900s even single adults were rarely seen in the breeding season. It is encountered in Ohio as a passage migrant and rarely as a winter guest, though two recent nestings have been confirmed. Changing land-use in Ohio mainly turned forest into agricultural land and thus is not very likely to have rendered the region inhospitable to the Merlin; global warming on the other hand cannot be dismissed as a reason, given that the Merlin is essentially a subarctic species that barely ranges even into temperate climes. Also, it may be that the number of Merlins wintering in the northern USA has increased during the 20th century.^{[1][6]}

Perhaps the most frequent cause of accidental death for individuals is collision with man-made objects, particularly during attacks. This may account for almost half of all premature deaths of Merlins. In the 1960s and 1970s, organochlorine pesticides were responsible for declines—particularly in Canada—due to eggshell thinning and subsequent brood failure, and compromising the immune system of adults. This has since been remedied with restrictions on the use of DDT and similar chemicals, and numbers have rebounded. Overall, Merlin stocks appear globally stable; while they may decline temporarily in places, they will usually increase again eventually, suggesting that this phenomenon is due to the fluctuations of supplementary food stocks discussed above.^[1]

Popular culture

The famous Rolls-Royce Merlin aeroengine is named for this bird.

SpaceX named its Merlin (rocket engine) after the Merlin.

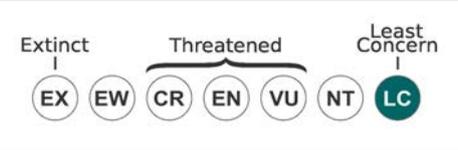
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- [8] Merlin (<http://web.archive.org/web/20100727110251/http://www.carolinaraptorcenter.org/merlin.php>). Carolina Raptor Center
- [10] AnAge (2009). *Falco columbarius* life history data (http://genomics.senescence.info/species/entry.php?species=Falco_columbarius). genomics.senescence.info

External links

- Merlin Falcon Foundation (<http://www.merlinfalconfoundation.org>) A non-profit organization that researches the Coastal Forest Merlin's life history and educates scientists and citizens about this raptor's importance to the Northwest environment.
- Cornell Lab of Ornithology - Merlin (<http://www.birds.cornell.edu/AllAboutBirds/BirdGuide/Merlin.html>)
- USGS Patuxent - Merlin (<http://www.mbr-pwrc.usgs.gov/id/framlst/i3570id.html>)
- Picture of Black Merlin (*Falco columbarius suckleyi* subspecies) (<http://www.birdwatching-bliss.com/falcon-photos.html>)
- Oiseaux (<http://www.oiseaux.net/birds/photos/merlin.html>) Photos.
- Ageing and sexing (PDF; 5.3) by Javier Blasco-Zumeta & Gerd-Michael Heinze (http://www.ibercajalav.net/img/133_MerlinF.columbarius.pdf)
- Audio recordings of Merlins (<http://www.xeno-canto.org/species/Falco-columbarius>) on Xeno-canto.
- Sounds of Merlin by Martyn Stewart ([http://www.naturesound.org/this_weeks_recordings/Entries/2009/2/8_Seattle_merlins_\(breeding_pair\).html](http://www.naturesound.org/this_weeks_recordings/Entries/2009/2/8_Seattle_merlins_(breeding_pair).html))
- Merlin (<http://www.peregrine-foundation.ca/raptors/Merlin.html>), Canadian Peregrine Foundation

Bat Falcon

Bat Falcon	
	
In Manizales, Caldas, Colombia	
Conservation status	
	
Least Concern (IUCN 3.1) ^[1]	
Scientific classification	
Kingdom:	Animalia
Phylum:	Chordata
Class:	Aves
Order:	Falconiformes
Family:	Falconidae
Genus:	<i>Falco</i>
Species:	<i>F. ruficularis</i>
Binomial name	
<i>Falco ruficularis</i> Daudin, 1800	
Synonyms	
<ul style="list-style-type: none"> • <i>Falco albigularis</i> Daudin, 1800 • <i>Falco fuscoerulescens</i> Vieillot, 1817 (modern spelling) • <i>Falco fusco-coerulescens</i> Vieillot, 1817 (original spelling) 	

The **Bat Falcon** (*Falco ruficularis*) is a falcon that is a resident breeder in tropical Mexico, Central and South America and Trinidad. It was long known as *Falco albigularis*; the name *Falco fusco-coerulescens* or *Falco fuscoerulescens*, long used for the Aplomado Falcon, are now believed to refer to the present species.^[1]

The female Bat Falcon, at 30.5 cm length, is much larger than the 23 cm long male. Adults have a black back, head and tail. The throat, upper breast and neck sides are creamy white, the lower breast and belly are black, finely barred white, and the thighs and lower belly are orange. Young birds are similar but with a buffy throat. The call of this species is a high pitched *ke-ke-ke* like American Kestrel.

It is probably closely related to and looks like a small version of the Orange-breasted Falcon. These two, in turn, are probably closest to the Aplomado Falcon and constitute a rather old American lineage of *Falcos*.^[2]

This small dark bird of prey inhabits open woodlands and forest clearings. Bat Falcons perch conspicuously on high open snags, from which they launch aerial attacks on their prey. They hunt bats, birds and large insects such as dragonflies. The smaller male takes more insects, and the female more birds and bats. The flight is direct and powerful. This falcon is partly crepuscular, as the bats in its diet suggest. It lays 2–3 brown eggs in an unlined tree hole nest.

Notes

[2] Probably diverging from their relatives some 8-5 million years ago, during the Late Miocene. See Birregard (1994), Helbig *et al.* (1994), Wink *et al.* (1998), Griffiths (1999), Groombridge *et al.* (2002), Griffiths *et al.* (2004)

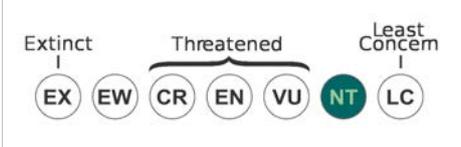
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External links

- Bat Falcon videos (<http://ibc.lynxeds.com/species/bat-falcon-falco-rufigularis>) on the Internet Bird Collection
 - Stamps (<http://www.bird-stamps.org/cspecies/3204500.htm>) (for Suriname) with RangeMap
 - Bat Falcon photo gallery (<http://vireo.acnatsci.org/search.html?Form=Search&SEARCHBY=Common&KEYWORDS=bat+falcon&showwhat=images&AGE=All&SEX=All&ACT=All&Search=Search&VIEW=All&ORIENTATION=All&RESULTS=24>) VIREO Photo-High Res (http://vireo.acnatsci.org/species_image.php?species=Falco+rufigularis)
 - Photo-Medium Res (<http://www.oiseaux.net/oiseaux/falconiformes/images/faucon.des.chauves-souris.lohe.1g.jpg>); Article (<http://www.oiseaux.net/photos/louis.s.hegedus/faucon.des.chauves-souris.1.html>)
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Orange-breasted Falcon

Orange-breasted Falcon	
	
Conservation status	
	
Near Threatened (IUCN 3.1) ^[1]	
Scientific classification	
Kingdom:	Animalia
Phylum:	Chordata
Class:	Aves
Order:	Falconiformes
Family:	Falconidae
Genus:	<i>Falco</i>
Species:	<i>F. deiroleucus</i>
Binomial name	
<i>Falco deiroleucus</i> Temminck, 1825	

The **Orange-breasted Falcon** (*Falco deiroleucus*) is a bird of the falcon family. It is probably closely related to and looks like a larger version of the Bat Falcon. These two, in turn, are probably closest to the Aplomado Falcon and constitute a rather old American lineage of *Falcos*.^[2]

It is found from southern Mexico to northern Argentina. It's a medium-sized falcon at 35–40 cm (14–16 in) long and a weight of 325–700 grams (11.5 oz.-1.5 lbs).^[3] It is a bird predator, with strong talons that enable it to catch prey in flight, and is considered by some – as the German-Brazilian ornithologist Helmut Sick – as filling the ecological niche of the Peregrine Falcon as a breeding species in tropical America. The Orange-breasted Falcon, however, seems to favor more heavily wooded habitats than the Peregrine, therefore the species does not seem to be in

ecological competition with Peregrine Falcons wintering or breeding in South America. The Orange-breasted Falcon has a similar plumage to the much smaller Bat Falcon and is generally considered most closely related to that species now.

Footnotes

- [2] Probably diverging from their relatives some 8-5 million years ago, during the Late Miocene. See Birregard (1994), Helbig *et al.* (1994), Wink *et al.* (1998), Griffiths (1999), Groombridge *et al.* (2002), Griffiths *et al.* (2004)
- [3] Identification – Orange-breasted Falcon (*Falco deiroleucus*) – Neotropical Birds (http://neotropical.birds.cornell.edu/portal/species/identification?p_spp=36232). Neotropical.birds.cornell.edu. Retrieved on 2013-03-07.

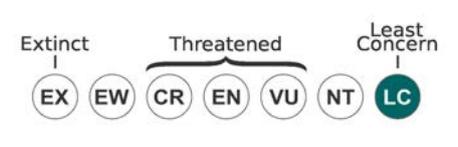
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- Wink, Michael; Seibold, I.; Lotfikhah, F. & Bednarek, W. (1998): Molecular systematics of holarctic raptors (Order Falconiformes). *In*: Chancellor, R.D., Meyburg, B.-U. & Ferrero, J.J. (editors): *Holarctic Birds of Prey*: 29–48. Adenex & WWGBP. PDF fulltext (<http://www.uni-heidelberg.de/institute/fak14/ipmb/phazb/pubwink/1998/31.1998.pdf>)

External links

- Orange-breasted Falcon photo gallery (<http://vireo.acnatsci.org/search.html?Form=Search&SEARCHBY=Common&KEYWORDS=orange-breasted+falcon&showwhat=images&AGE=All&SEX=All&ACT=All&Search=Search&VIEW=All&ORIENTATION=All&RESULTS=24>) VIREO
- Stamp photo (<http://www.bird-stamps.org/recent/bolivi/birds2002/2.htm>) (for Bolivia)
- Orange-breasted Falcon videos (<http://ibc.lynxeds.com/species/orange-breasted-falcon-falco-deiroleucus>) on the Internet Bird Collection

Eurasian Hobby

Eurasian Hobby	
	
Conservation status	
	
Least Concern (IUCN 3.1) ^[1]	
Scientific classification	
Kingdom:	Animalia
Phylum:	Chordata
Class:	Aves
Order:	Falconiformes
Family:	Falconidae
Genus:	<i>Falco</i>
Species:	<i>F. subbuteo</i>
Binomial name	
<i>Falco subbuteo</i> Linnaeus, 1758	

The **Eurasian Hobby** (*Falco subbuteo*), or just simply **Hobby**, is a small slim falcon. It belongs to a rather close-knit group of similar falcons often considered a subgenus *Hypotriorchis*.^[1]

Description

Adults are slate-grey above with a dark crown and 2 short black moustachial stripes. The throat is unstreaked white, thighs and undertail coverts are unstreaked rufous and rest of the underparts are whitish with black streaks. Close views enable the red "trousers" and vent to be seen. Sexes are similar. Juveniles are generally much browner, with scaled upper parts and streaked buffy thighs and undertail coverts.

The Hobby has a distinct first-summer plumage.^[2]

Taxonomy and systematics

This species was first described by Linnaeus in his *Systema naturae* in 1758 as *Falco subbuteo*.^[3]

Currently two subspecies are recognized:

- *subbuteo* – the nominate race is resident in Africa, Europe and Central and East Asia, winters in Central and South Africa and South Asia
- *streichi*, described by Hartert and Neumann in 1907, is smaller in size and is found further east of *subbuteo*'s distribution range

Distribution and status

This species breeds across Africa, Europe and Asia. It is a long-distance migrant, wintering in Africa and Asia.

Behaviour and ecology

It is a bird of open country such as farmland, marshes, taiga and savannah. They are widespread in lowlands with scattered small woods. It is an elegant bird of prey, appearing sickle-like in flight with its long pointed wings and square tail, often resembling a swift when gliding with folded wings. It flies powerfully and fast. It will take large insects, such as dragonflies, which it transfers from talons to beak and eats while soaring slowly in circles.^[1] It also captures small bats and small birds like swallows, swifts, pipits etc. in flight. Its speed and aerobatic skills enable it to take swallows and even swifts on the wing, and Barn Swallows or House Martins have a characteristic "hobby" alarm call. It is known to harass swallows while they are roosting and dispersing from roosts.^[1] When not breeding, it is crepuscular, hawking principally in the mornings and evenings. While on migration, they may move in small groups.

Hobbies nest in old nests of crows and other birds. The tree selected is most often one in a hedge or on the extreme edge of a spinney, whence the bird can observe intruders from a considerable distance. It lays 2–4 eggs. Incubation is said to take 28 days and both parents share in this duty, though the female does the greater part.^[1]

It is a very bold and courageous bird and was used in falconry, trained to hawk birds like quails, larks, hoopoes, drongos etc.^[1]



Falco subbuteo from Kadzidlowo



Juvenile *Falco subbuteo* portrait

Notes

- [1] Helbig *et al.* (1994), Wink *et al.* (1998), Nittinger *et al.* (2005)
 [2] Small, Brian (1992): First-summer Hobbies in the New Forest *British Birds* 85(5): 251–5

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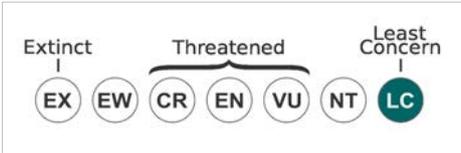


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- Wink, Michael; Seibold, I.; Lotfikhah, F. & Bednarek, W. (1998): Molecular systematics of holarctic raptors (Order Falconiformes). *In*: Chancellor, R.D., Meyburg, B.-U. & Ferrero, J.J. (eds.): *Holarctic Birds of Prey*: 29–48. Adenex & WWGBP. PDF fulltext (<http://www.uni-heidelberg.de/institute/fak14/ipmb/phazb/pubwink/1998/31.1998.pdf>)

External links

- (Eurasian Hobby =) Hobby Falcon - Species text in The Atlas of Southern African Birds (<http://sabap2.adu.org.za/docs/sabap1/173.pdf>).
- Ageing and sexing (PDF; 5.7 MB) by Javier Blasco-Zumeta & Gerd-Michael Heinze (http://www.ibercajalav.net/img/134_HobbyFsubbuteo.pdf)
- Audio recordings of *Falco subbuteo* (<http://www.xeno-canto.org/species/Falco-subbuteo>) on Xeno-canto.
- Photos, Videos (<http://ibc.lynxeds.com/species/eurasian-hobby-falco-subbuteo>)

African Hobby

African Hobby	
	
Conservation status	
	
Least Concern (IUCN 3.1) ^[1]	
Scientific classification	
Kingdom:	Animalia
Phylum:	Chordata
Class:	Aves
Order:	Falconiformes
Family:	Falconidae
Genus:	<i>Falco</i>
Species:	<i>F. cuvierii</i>
Binomial name	
<i>Falco cuvierii</i> Smith, 1830	

The **African Hobby** (*Falco cuvierii*) is a small species of bird of prey in the Falconidae family.

Description

A small, slim falcon with blackish upperparts and deep rufous underparts with rufous cheek, nape and throat. At close range black streaks can be seen on the throat and flanks. The facial skin and feet are yellow. Juvenile birds are browner above with heavier streaking on the underparts and paler on cheek, nape and throat. Length 20 cm, wingspan 70 cm.

Habitat

Edge of moist woodlands and forests, commonest in palm savannah and gallery forest in west and western regions of East Africa. Less common in central Africa and north-eastern Africa.

Behaviour and diet

Hunts on the wing, mainly at dawn and dusk. When not breeding the African Hobby is thought to feed almost entirely on flying insects: termite alates, grasshoppers, locusts, beetles and cicadas have all been recorded. Feeding concentrations of up to 30 birds have been recorded when termite alates or locusts are swarming. When breeding a high proportion of small birds such as weavers, estrildid finches and swallows up to the size of doves are favoured. It hunts either by making sorties from a perch or quartering across favoured hunting areas at 50-100m. Normally encountered as solitary birds but sometimes in pairs or small family groups. For nesting they use the old stick nests of other birds, especially Black Kite, which are situated high in a tree. Breeding has been recorded in December to June in the western part of the range, August to December in equatorial East Africa and September to January in southern Africa.

Distribution

It is found in Angola, Benin, Botswana, Burkina Faso, Burundi, Cameroon, Central African Republic, Chad, Republic of the Congo, Democratic Republic of the Congo, Ivory Coast, Ethiopia, Gabon, Gambia, Ghana, Guinea, Guinea-Bissau, Kenya, Liberia, Malawi, Mali, Mozambique, Namibia, Niger, Nigeria, Rwanda, Senegal, Sierra Leone, Somalia, South Africa, Sudan, Swaziland, Tanzania, Togo, Uganda, Zambia, and Zimbabwe. This species can be nomadic, following food sources.

Taxonomy

African Hobby is a monotypic species. As a typical hobby it has been traditionally considered a member of the subgenus *Hypotriorchis* due to its similar morphology to the other hobbies.

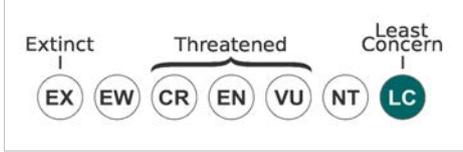
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External links

- African Hobby (Falcon) - Species text in *The Atlas of Southern African Birds* (<http://sabap2.adu.org.za/docs/sabap1/174.pdf>).

Oriental Hobby

Oriental Hobby	
Conservation status	
 <p>Least Concern (IUCN 3.1)^[1]</p>	
Scientific classification	
Kingdom:	Animalia
Phylum:	Chordata
Class:	Aves
Order:	Falconiformes
Family:	Accipitridae
Genus:	<i>Falco</i>
Species:	<i>F. severus</i>
Binomial name	
<p><i>Falco severus</i> Horsfield, 1821</p>	

The **Oriental Hobby** (*Falco severus*) is a species of falcon typically 27–30 cm long. It can be found in the northern parts of the Indian Subcontinent, across the eastern Himalayas and ranges southwards through Indochina to Australasia.^[2] It has been recorded as a vagrant from Malaysia.

Diet and habitats

The Oriental Hobby feeds mainly on insects. Its typical habitats are lowland forested areas and woodland. It nests in used nest of other birds either in trees, on building ledges or on cliffs.

Identification

Adult is rich chestnut below, bluish-grey above with a black hood and pale throat. Juvenile has black streaks on its rufous chest and has a mottled back.

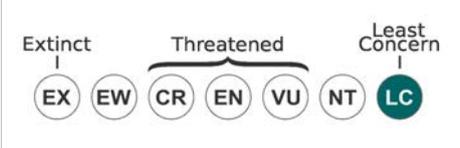
References

[2] Birding-Aus Mailing List Archives (<http://bioacoustics.cse.unsw.edu.au/birding-aus/>)

External links

- BirdLife Species Factsheet (<http://www.birdlife.org/datazone/species/index.html?action=SpcHTMDetails.asp&sid=3612&m=0>)

Australian Hobby

Australian Hobby	
	
Conservation status	
	
<p>Least Concern (IUCN 3.1)^[1]</p>	
Scientific classification	
Kingdom:	Animalia
Phylum:	Chordata
Class:	Aves
Order:	Falconiformes
Family:	Falconidae
Genus:	<i>Falco</i>
Species:	<i>F. longipennis</i>
Binomial name	
<p><i>Falco longipennis</i> Swainson, 1837</p>	



Samsonvale Cemetery, SE Queensland

The **Australian Hobby** or **Little Falcon** (*Falco longipennis*) is a falcon found mainly in Australia. It is also a winter migrant to Indonesia and New Guinea. It is one of Australia's smallest raptors and is about 30–36 cm long.

It strongly resembles the Peregrine Falcon, however it is much smaller and has darker plumage.

It inhabits open woodlands where it manoeuvres swiftly through the foliage in chase of other birds. It is very adaptable and will visit urban parks and gardens, and remnant bushland. They will hunt small birds, up to nearly their own size, and are often seen at dusk hunting bats and large insects.

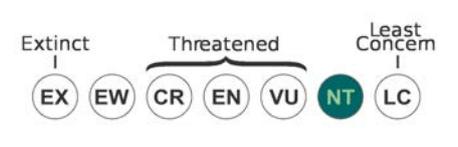
When breeding it takes over nests of other birds. The female incubates and broods young while the male hunts.

It gets its scientific name from its narrow long-flighted wings. This adaptable falcon often shadows the

collared sparrow hawk in suburban terrain, benefitting from birds flushed out of dense foliage by the more agile hawk. Prey fleeing cover for the open where they can out fly the sparrowhawk is then taken in a stoop or stoop and chase by the faster falcon. Hobbies have been observed waiting on over sparrowhawk much like a trained falconer's bird would, much to the chagrin of the hawk who will regularly attack the falcon and pursue it in a sometimes spectacular aerial dogfight.

References

New Zealand falcon

New Zealand Falcon	
	
Conservation status	
	
Near Threatened (IUCN 3.1) ^[1]	
Scientific classification	
Kingdom:	Animalia
Phylum:	Chordata
Class:	Aves
Order:	Falconiformes
Family:	Falconidae
Genus:	<i>Falco</i>
Species:	<i>F. novaeseelandiae</i>
Binomial name	
<i>Falco novaeseelandiae</i> Gmelin, 1788	

The **New Zealand Falcon** or **Kārearea** (*Falco novaeseelandiae*) is New Zealand's only endemic falcon and the only remaining bird of prey endemic to New Zealand. Other common names for the bird are Bush Hawk and Sparrow Hawk. It is frequently mistaken for the larger and more common Swamp Harrier.

Description

A member of the Falconidae bird family, the New Zealand Falcon is mainly found in heavy bush and the steep high country in the South Island and is rarely seen north of a line through the central area of the North Island. A small population also breeds on the Auckland Islands; the species is known from the Chatham Islands from fossil remains. Although protected since 1970, it is considered to be a threatened species.^[2]

Ornithologists variously described the New Zealand Falcon as an aberrant hobby or as allied to three South American species (*F. deiroleucus*, *F. rufigularis* and *F. femoralis*); however studies of feather proteins suggest a close tie with the Australian Brown Falcon.^[3]

It differs from the much larger Swamp Harrier, (or Kāhu), which is common throughout New Zealand, in that it catches other birds on the wing, and seldom eats carrion. An aggressive bird that displays great violence when defending its territory, the New Zealand Falcon has been reported to attack dogs as well as people.

With a wingspan of about 45 cm and weight rarely exceeding 450g, the New Zealand Falcon is slightly over half the size of the Swamp Harrier, which it usually attacks on sight. The male is about two thirds the weight of the female.^[4]

The New Zealand Falcon nests in a scrape in grassy soil or humus in various locations: under a rock on a steep slope or on a rock ledge, among epiphytic plants on a tree branch, or under a log or branch on the ground,^{[5][6]} making the two or three eggs that they lay vulnerable to predators such as stray cats, stoats, weasels, possum, and wild dogs.



Falcons for Grapes programme

In 2005 funding was given by the Ministry of Agriculture and Forestry towards a programme that uses the falcons to control birds that damage grapes and act as pests in vineyards as well as monitoring the birds and establishing a breeding population in the vicinity of the Marlborough wine region.^[7] Initially, four falcons were relocated to the vineyards from the surrounding hills. After the release of a further 15 birds breeding began to occur - the first time it is thought to have happened since land clearance 150 years ago. A major ongoing threat to the birds is electrocution on electricity distribution transformers with a fifth of the birds killed in this manner.^{[8][9]}



New Zealand falcon (from Buller's *Birds of New Zealand*, 1888)

Cultural references

The New Zealand Falcon features on the reverse of the New Zealand \$20 note and has twice been used on New Zealand stamps. It was also featured on a collectable \$5 coin in 2006.^[10]

References

[10] 2006 New Zealand Falcon coin sets (<http://stamps.nzpost.co.nz/Cultures/en-NZ/Coins/CurrentIssues/FalconCoins/>). Accessed 6 April 2006.

Further reading

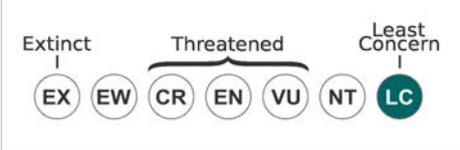
- Crichton, Sandy (May 2009), "On a wing and a prayer", *Forest & Bird*: 21–25

- Seaton, Richard (2007), "The ecological requirements of the New Zealand falcon (*Falco novaeseelandiae*) in plantation forestry." (<http://muir.massey.ac.nz/handle/10179/658>), *Unpublished PhD thesis, Massey University, Palmerston North*
- Thomas, Andrew C.W. (2008), "The Behaviour and Development of New Zealand Falcons (*Falco novaeseelandiae*) Nesting in a Plantation Forest." (<http://muir.massey.ac.nz/handle/10179/3160>), *Unpublished MSc thesis, Massey University, Palmerston North*

External links

- Wingspan Birds of Prey Trust (http://www.wingspan.co.nz/birds_of_prey_new_zealand_falcon.html) - The national centre for the conservation, education and advocacy of birds of prey in New Zealand. Location: Rotorua, NZ.
- Raptor Association of New Zealand (<http://www.facebook.com/groups/184317061623567/?ref=ts&fref=ts/>)
- New Zealand Falcon (<http://nzbirdsonline.org.nz/species/new-zealand-falcon>) New Zealand Birds Online
- New Zealand falcon/Kārearea (<http://doc.govt.nz/conservation/native-animals/birds/land-birds/nz-falcon-karearea/>) at Department of Conservation (New Zealand)
- New Zealand Falcon (<http://www.birdlife.org/datazone/speciesfactsheet.php?id=3614>) at Birdlife International
- New Zealand falcon (<http://www.teara.govt.nz/en/birds-of-prey/3>) at Te Ara Encyclopedia of New Zealand
- Assessment of the potential for the integration of New Zealand falcon conservation and vineyard pest management (<http://sites.google.com/site/xnelson/falcons/>)
- Marlborough Falcon Conservation Trust (<http://www.mfct.org.nz/>)
- Raptor Alliance for New Zealand (<http://www.ranz.org.nz/>)

Brown Falcon

Brown Falcon	
	
Conservation status	
	
Least Concern (IUCN 3.1) ^[1]	
Scientific classification	
Kingdom:	Animalia
Phylum:	Chordata
Class:	Aves
Order:	Falconiformes
Family:	Falconidae
Genus:	<i>Falco</i>
Species:	<i>F. berigora</i>
Binomial name	
<p><i>Falco berigora</i> Vigors & Horsfield, 1827</p>	
Synonyms	
<p><i>Asturaetus furcillatus</i> De Vis, 1906 <i>Plioetus furcillatus</i> (De Vis, 1906)</p>	

The **Brown Falcon** (*Falco berigora*), also known as the **Brown Hawk**, is a member of the falcon genus found in the drier regions of Australia. Its specific name *berigora* is derived from an aboriginal name for the bird.

The flight and hunting methods of the brown falcon differ markedly from those of other falcons. Both its wing-beats and flight are relatively slow. It is usually seen quietly perched or flying, alternatively beating its wings and gliding with wings held in a shallow "V" position. It sometimes hovers rather inefficiently, especially on windy days, but it has the ability to soar to great heights.

The brown falcon does not hunt by chasing its prey in flight. Its main method of searching for its food is to sit quietly on a high perch such as a dead branch on a tree or power pole. It drops down on its prey and grabs it with its talons. The falcon also searches for prey whilst gliding and flying.



A Brown Falcon used for falconry in Tasmania

Description

Adults are usually 40 cm to 50 cm long. They are found in light and dark forms and a variety of intermediates. Animals typically have red-brown heads with narrow black streaks with a light crown and off white chin. Wings are a spotted red-brown with dark brown quills. Beaks are light blue/grey, eyes are brown. The falcons make a loud cackle call uttered frequently.

Breeding and habitat

Brown falcons breed from June - November usually in an old nest of another hawk species, they occasionally nest in hollow limbs of trees. The brown falcon lays between 2-5 eggs that have red and brown spots and blotches.

Brown falcons are found throughout Australia. Darker forms of the animal are usually found in arid areas. The brown falcon has been spotted in New Guinea.

Diet

The brown falcon eats small mammals, including house mice and young rabbits. It also eats small birds, lizards, snakes and a variety of invertebrates particularly caterpillars, grasshoppers, crickets and beetles. Insects form the bulk of the animals diet during winter and the falcons often chase the insects on the ground.

References

- *Birds of The World* by Colin Harrison and Alan Greensmith.
- *Complete Book of Australian Birds* Readers Digest

Gallery



John Gould
illustration



Brown falcon portrait

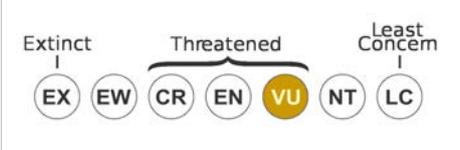


Brown falcon



In flight in Victoria, Australia

Grey Falcon

Grey Falcon	
	
Conservation status	
	
Vulnerable (IUCN 3.1) ^[1]	
Scientific classification	
Kingdom:	Animalia
Phylum:	Chordata
Class:	Aves
Order:	Falconiformes
Family:	Falconidae
Genus:	<i>Falco</i>
Species:	<i>F. hypoleucos</i>
Binomial name	
<i>Falco hypoleucos</i> Gould, 1841	

The **Grey Falcon** (*Falco hypoleucos*) is a rare medium-sized falcon, one of the enigmatic ‘mystery’ birds of Australia, neither easily nor predictably seen. Recent studies however have contributed to the gathering of further information on this elusive bird of prey.^[2] One of the reasons behind this lack of information could be the difficulty in identifying a Grey Falcon while in the field. Schoenjahn (2010) has identified other species of birds which are often mistaken for a Grey Falcon such as the; Brown Falcon (*Falco berigora*), Grey Goshawk (*Accipiter novaehollandiae*), adult Collared Sparrowhawk (*Accipiter cirrhocephalus*), Brown Goshawks (*Accipiter fasciatus*) and the Black-shouldered Kite (*Elanus axillaris*).^[3]

Description

Mainly grey upperparts and white underparts; darker on the tips of the flight feathers; yellow cere. Body length 30–45 cm; wingspan 85–95 cm; weight 350–600 g. Females larger.^[4] Grey Falcons are known to have a body length between 30–45 cm, making them a mid-sized bird. Females are generally larger in body size and wingspan.^[5] The wingspan of a male is less than 300mm and the tail length is less than 150mm. For the females, the wingspan is generally more than 305mm and the tail length is more than 150mm. The weight of the Grey Falcon also fluctuates with gender.^[3] The female weighs approximately 559 grams on average (and between 486 and 624g) and the male is 378 grams (and between 335 and 419g).^[6] The Grey Falcon has mostly grey upper body parts. It is heavy-shouldered with a black streak under the eyes. The wingtips are also black and the cere, eye ring and feet are a very vibrant yellow. The tail of the bird is grey and faintly barred like the underwings. The lower section of the body is white with fine dark streaks and on younger birds this feature is darker and more distinctive. The call of the Grey Falcon is Hoarse chattering, clucking and whining sounds. It is similar to the Peregrine Falcon and has a loud, slow 'kek-kek-kek' or 'kak-ak-ak-ak' but is slower, deeper and harsher than the Peregrine Falcon.^[7] Grey falcons are also a lazy bird they mainly like to use abandoned nests and not bother to make their own.

Distribution and habitat

The Grey Falcon is an Australian endemic, usually confined to the arid inland. Open country: *Triodia* grassland, *Acacia* shrubland, and lightly timbered arid woodland.^[4] They have been sighted over most of mainland Australia except for Cape York. Very few have been seen on the Nullarbor Plain and in the Great Victoria, Gibson and Great Sandy Deserts. Most sightings of the Grey Falcon have been within the arid zones, with rainfall less than 500mm. When they have been occasionally seen outside of these areas, they have been found in similar dry, low altitude, open woodland or grassland. The only times this bird has been seen in different conditions has been along the Queensland coast during drought years. The Grey Falcon is often seen in family-type groups of an adult pair and usually one (but up to four) first year birds.^[8]

Conservation

It is found at very low densities, numbering only 1,000 breeding pairs, and the population may be stable. Continued high levels of grazing in arid zone rangelands and clearance of the semi-arid zone for marginal farming is degrading habitat.^[4]

International

The species was previously listed as Near Threatened; in 2012 it was uplisted to Vulnerable.^[9] Listed on CITES Appendix II.

Australia

Grey Falcon are listed as endangered on the Australian Environment Protection and Biodiversity Conservation Act 1999.^[10]

State of Victoria, Australia

- The Grey Falcon is listed as **threatened** on the Victorian Flora and Fauna Guarantee Act (1988).^[11] Under this Act, an *Action Statement* for the recovery and future management of this species has been prepared.^[12]
- On the 2007 advisory list of threatened vertebrate fauna in Victoria, The Grey Falcon is listed as endangered.^[1]

State of Queensland, Australia

- The Grey Falcon is listed as **rare** under the Nature Conservation Act 1992.^[13]

Behaviour

Diet

When sighted and observed, most Grey Falcons have been seen hunting. They have a habit of eating on the ground, in the open and around inland bores which make them quite easy to observe while eating. From 88% of observations it can be said that their main prey is other birds, followed by small mammals (6%), reptiles (5%) and insects such as worms (1%). The birds which they feed on usually form flocks and feed on the ground which is typical of birds in arid regions such as parrots and pigeons. Grey Falcons have also been sighted with animals such as; a Mallee Ringneck, a duck, a Yellow-rumped Thornbill, locusts, snakes, a large dragon, the House Mouse, rabbit kittens, lamb carcasses and one has even been seen pursuing a bat.^[8]

Nesting

The Grey Falcon's breeding range has shrunk recently with breeding occurring in the more arid sections of their distribution.^[8] They breed once a year but may nest twice a year during abundant seasons or may not nest during drought times. Breeding and nesting occur within the distribution range with nests normally being an abandoned stick nest from another species of bird of prey. Nests are often selected in an upright fork, of the top of a tall tree. These can be located in a patch or a belt of timber along a watercourse in dry inland areas. Nests can be used for several years within the nesting season of July to October in the south and April to June in the North. The Grey Falcon eggs look very similar to the Black Falcon's (*Flaco subniger*) but are slightly smaller. A clutch size is generally two or three and occasionally four eggs that are oval shaped and 51x38 mm on average.^[14]

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- [10] EPBC Act List of Threatened Fauna (<http://www.environment.gov.au/cgi-bin/sprat/public/publicthreatenedlist.pl?wanted=fauna>). environment.gov.au
- [11] Department of Sustainability and Environment, Victoria (<http://www.dse.vic.gov.au/DSE/nrenpa.nsf/LinkView/EADA0F1874AF9CF24A2567C1001020A388BBA5581CF9D859CA256BB300271BDB>)
- [12] Department of Sustainability and Environment, Victoria (<http://www.dse.vic.gov.au/DSE/nrenpa.nsf/LinkView/617768308BCB666E4A25684E00192281E7A24BB36FF60A144A256DEA00244294>)
- [13] Queensland Department of Environment and Resource Management (http://www.derm.qld.gov.au/wildlife-ecosystems/wildlife/threatened_plants_and_animals/rare/rare_animals.html)
- [14] Beruldsen, G. (2003). *Australian birds, their nests and eggs*. G. Beruldsen.

External links

- BirdLife International. (2006). Species factsheet: *Falco hypoleucos*. Downloaded from <http://www.birdlife.org> on 9/12/2006

Black Falcon

Black Falcon	
	
Conservation status	
<div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">Extinct EX</div> <div style="text-align: center;">EW</div> <div style="text-align: center;">Threatened CR</div> <div style="text-align: center;">EN</div> <div style="text-align: center;">VU</div> <div style="text-align: center;">NT</div> <div style="text-align: center;">Least Concern LC</div> </div> <p>Least Concern (IUCN 3.1)^[1]</p>	
Scientific classification	
Kingdom:	Animalia
Phylum:	Chordata
Class:	Aves
Order:	Falconiformes
Family:	Falconidae
Genus:	<i>Falco</i>
Species:	<i>F. subniger</i>
Binomial name	
<p><i>Falco subniger</i> Gray, 1843</p>	

The **Black Falcon** (*Falco subniger*) is a medium-large falcon that lives only in Australia. It is mainly found in open grasslands and woodlands in the semi arid inland parts of Australia. First year falcons are a dark black in colour fading to browner black in successive years. It is fast flying for its size with tapering, pointed wings.

The females are usually around 55 cm (22 in) from beak to tail, the smaller males being only 45 cm (18 in). The sexes are very similar apart from their size. They are comparatively lighter in build than Peregrines with a slightly wider wingspan and longer legs. They are more agile on the ground than Peregrines though less so than Brown Falcons.

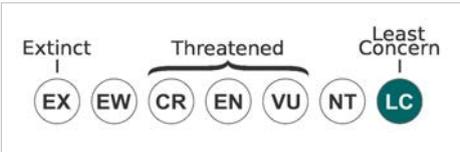
Its relationships are enigmatic, like with many falcons. It might be an early offshoot of the Old World hierofalcons such as the Saker Falcon. (Wink *et al.* 2004)

The Black Falcon's prey is mainly birds, such as quail, various parrot species, finches, magpies, crows, starlings etc. It often takes prey on the wing either in the stoop or stooping into a chase. It also eats ground-dwelling animals such as lizards, rabbits, rats, mice and small marsupials. It is well known as a pirate of other species of raptors such as Harriers, Kestrels and Kites. They will often hunt at the edges of bush fires for fleeing prey. Females have been observed killing Peregrine Tercels and vice versa in areas where the two species compete for food. The Black Falcon is one of the few falcons which have been observed eating carrion. Black Falcons are nomadic over most of their range usually following quail. Unlike new world Falcons Black Falcons do not aggressively defend their nests from predators. Their decrease in number can largely be attributed to predation of nestling falcons by introduced feral cats.

References

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Lanner Falcon

Lanner Falcon	
	
Adult <i>Falco biarmicus feldeggii</i>	
Conservation status	
	
Least Concern (IUCN 3.1) ^[1]	
Scientific classification	
Kingdom:	Animalia
Phylum:	Chordata
Class:	Aves
Order:	Falconiformes
Family:	Falconidae
Genus:	<i>Falco</i>
Subgenus:	(<i>Hierofalco</i>)
Species:	<i>F. biarmicus</i>
Binomial name	
<i>Falco biarmicus</i> Temminck, 1825	
Synonyms	
<i>Falco feldeggii</i> Schlegel, 1843 ^[2] <i>Falco feldeggi</i> Strickland, 1855 (<i>lapsus</i>)	

The **Lanner Falcon** (*Falco biarmicus*^[3]) is a large bird of prey that breeds in Africa, southeast Europe and just into Asia. It is mainly resident, but some birds disperse more widely after the breeding season.

Description



Flying in South Africa

It is a large falcon, at 43–50 cm length with a wingspan of 95–105 cm. European Lanner Falcons (*Falco biarmicus feldeggi*, also called **Feldegg's Falcon**) have slate grey or brown-grey upperparts; most African subspecies are a paler blue grey above. The breast is streaked in northern birds, resembling greyish Saker Falcons, but the Lanner has a reddish back to the head. Sexes are similar, but the browner young birds resemble Saker Falcons even more. However, Sakers have a lighter top of the head and less clear head-side patterns. The Lanner's call is a harsh "wray-e".

Taxonomy and systematics

The Lanner Falcon is a bird of open country and savanna. It usually hunts by horizontal pursuit, rather than the Peregrine Falcon's stoop from a height, and takes mainly bird prey in flight. It lays 3–4 eggs on a cliff ledge nest, or occasionally in an old stick nest in a tree.

This is presumably the oldest living hierofalcon species. Support for this assumption comes mainly from biogeography agreeing better with the confusing pattern of DNA sequence data in this case than in others. Nonetheless, there is rampant hybridization (see also Perilanner) and incomplete lineage sorting which confounds the data to a massive extent; molecular studies with small sample sizes can simply not be expected to yield reliable conclusions in the entire hierofalcon group. In any case, the radiation of the entire living diversity of hierofalcons seems to have taken place in the Eemian interglacial at the start of the Late Pleistocene, a mere 130,000–115,000 years ago; the Lanner Falcons would thus represent the lineage that became isolated in sub-Saharan Africa at some time during the Riss glaciation (200,000 to 130,000 years ago) already.^[4]

They are bred in captivity for falconry; hybrids with the Peregrine ("perilanners") are also often seen. Merret (1666) claimed that the "lanar" lived in Sherwood Forest and the Forest of Dean in England; such populations would seem to derive from escaped hunting birds of the nobility.

In the wild Lanner Falcon numbers are somewhat declining in Europe, though the species remains relatively common in parts of Africa.

Jackdaw flocks are targets of coordinated hunting by pairs of Lanner Falcons, although larger flocks are more able to elude becoming prey.^[5]



Painting by
John Gerrard
Keulemans
(1884)



Eagle Encounters, South Africa



Adult *Falco biarmicus biarmicus*, Etosha National Park, Namibia.



A falconer's Lanner in a dive. Note distinct head coloration.



Juvenile, probably *F. b. feldeggi*. Note blue facial skin and overall similarity to Saker Falcon.



Head of a Falcon (*Hierofalco istandus*) to show impervious nostrils, and tooth-like process of the bill.

A Gyrfalcon's head showing the "twice-armed" falcon bill (number 2).

Footnotes

[2] Possibly 1841 (Sharpe 1874: 389), or 1844 (Strickland 1855: 80).

[3] Etymology: *Falco*, Latin for a falcon. *biarmicus*, Latin for "being twice armed", in reference to the additional sharp points behind the billtip. These are typical of falcons in general however, not just this species.

[4] Helbig *et al.* (1994), Wink *et al.* (1998), Wink *et al.* (2004), Nittinger *et al.* (2005)

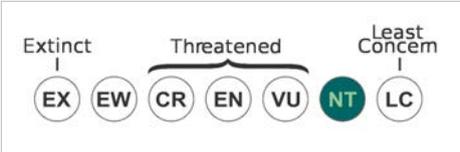
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External links

- Lanner Falcon – Species text in The Atlas of Southern African Birds (<http://sabap2.adu.org.za/docs/sabap1/172.pdf>).

Laggar Falcon

Laggar Falcon	
	
In Rajasthan, India	
Conservation status	
	
Near Threatened (IUCN 3.1) ^[1]	
Scientific classification	
Kingdom:	Animalia
Phylum:	Chordata
Class:	Aves
Order:	Falconiformes
Family:	Falconidae
Genus:	<i>Falco</i>
Subgenus:	(<i>Hierofalco</i>)
Species:	<i>F. jugger</i>
Binomial name	
<i>Falco jugger</i> J.E. Gray, 1834	

The **Laggar Falcon** (*Falco jugger*) is a mid-sized bird of prey which occurs in the Indian subcontinent from extreme south-east Iran, south-east Afghanistan, Pakistan, through India, Nepal, Bhutan, Bangladesh and north-west Myanmar.

It resembles the Lanner Falcon but is darker overall, and has blackish "trousers" (tibiotarsus feathers). Fledglings have an almost entirely dark underside, and first-year subadult birds still retain much dark on the belly.

This species belongs to a close-knit complex of falcons known as hierofalcons. In this group, there is ample evidence for rampant hybridization and incomplete lineage sorting which confounds analyses of DNA sequence data to a massive extent; molecular studies with small sample sizes can simply not be expected to yield reliable conclusions in the entire hierofalcon group. The radiation of the entire living diversity of hierofalcons seems to have taken place in the Eemian interglacial at the start of the Late Pleistocene, a mere 130,000-115,000 years ago; the Laggar Falcon represents a lineage that arrived at its present range out of eastern Africa by way of the Arabian Peninsula which during that time had a more humid climate than today.^[2]

Laggar Falcons used to be the most common falcons in the region, but numbers have declined markedly in recent times and today it is probably nowhere a common species anymore. The main threats are the intensification of pesticide use in the region and use as a decoy to trap large falcons.

Gallery



Adult bird, Thar desert,
Rajasthan (India).



Same as previous.



Same as previous; feeding on
Indian spiny-tailed lizard
(*Uromastyx hardwickii*).



The prey's spiny tail was not
eaten.



Laggar Falcon begins a swoop at
Tal Chhapar Sanctuary, (India)

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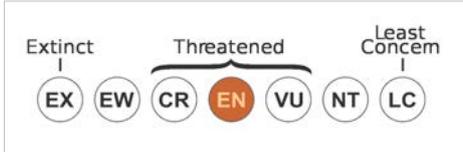
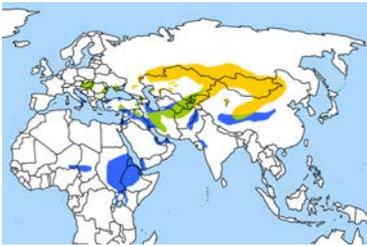
[2] Helbig *et al.* (1994), Wink *et al.* (1998), Wink *et al.* (2004), Nittinger *et al.* (2005)

- Helbig, A.J.; Seibold, I.; Bednarek, W.; Brüning, H.; Gaucher, P.; Ristow, D.; Scharlau, W.; Schmidl, D. & Wink, Michael (1994): Phylogenetic relationships among falcon species (genus *Falco*) according to DNA sequence variation of the cytochrome b gene. *In*: Meyburg, B.-U. & Chancellor, R.D. (eds.): *Raptor conservation today*: 593-599. PDF fulltext (<http://www.uni-heidelberg.de/institute/fak14/ipmb/phazb/pubwink/1994/4.1994.pdf>)
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External links

- BirdLife Species factsheet (<http://www.birdlife.org/datazone/species/index.html?action=SpcHTMLDetails.asp&sid=3618&m=0>)
- Sound recordings from Xeno-canto.org (<http://www.xeno-canto.org/species/Falco-jugger>)

Saker Falcon

Saker Falcon	
	
Conservation status	
	
Endangered (IUCN 3.1) ^[1]	
Scientific classification	
Kingdom:	Animalia
Phylum:	Chordata
Class:	Aves
Order:	Falconiformes
Family:	Falconidae
Genus:	<i>Falco</i>
Subgenus:	(<i>Hierofalco</i>)
Species:	<i>F. cherrug</i>
Binomial name	
<p><i>Falco cherrug</i> Gray, 1834</p>	
	
<p>Range of the Saker Falcon. Yellow = breeding Blue = wintering Green = all-year</p>	
Synonyms	
<p><i>Falco altaicus</i> (Menzbier, 1891) <i>Hierofalco altaicus</i> Menzbier, 1891</p>	

The **Saker Falcon** (*Falco cherrug*) is a very large falcon. This species breeds from eastern Europe eastwards across Asia to Manchuria. It is mainly migratory except in the southernmost parts of its range, wintering in Ethiopia, the Arabian peninsula, northern Pakistan and western China.

Description and systematics

The Saker Falcon is a large hierofalcon, larger than the Lanner Falcon and almost as large as Gyrfalcon at 47–55 cm (18-22 inches) length with a wingspan of 105–129 cm (42-50 inches). Its broad blunt wings give it a shadow similar to Gyrfalcon, but its plumage is more similar to a Lanner Falcon's.

Saker Falcons have brown upperbellies and contrasting grey flight feathers. The head and underparts are paler brown, with streaking from the breast down. Males (called **sakrets** in falconry) and females are similar, as are young birds, although these tend to be a duller brown. The call is a sharp *kiy-ee*.

Adults can be distinguished from the similar Lanner Falcon since the Lanner is blue-grey above with a reddish back to the head. However, juveniles of the two species can be very similar although the Saker Falcon always has a uniformly buff top of the head with dark streaks, and a less clear pattern on the sides of the head.

A further complication is that some Asian birds have grey barred upperparts; these must be separated from Lanner on size, structure, and a weaker moustache stripe. Saker Falcons at the northeast edge of the range in the Altai Mountains are slightly larger, and darker and more heavily spotted on the underparts than other populations. These, known as the **Altai Falcon**, have been treated in the past either as a distinct species "*Falco altaicus*" or as a hybrid between Saker Falcon and Gyrfalcon, but modern opinion (e.g. Orta 1994) is to tentatively treat it as a form of Saker Falcon, until comprehensive studies of its population genetics and ecology are available.

Unfortunately, this species belongs to the close-knit hierofalcon complex. In this group, there is ample evidence for rampant hybridization and incomplete lineage sorting which confounds analyses of DNA sequence data to a massive extent; molecular studies with small sample sizes can simply not be expected to yield reliable conclusions in the entire hierofalcon group. The radiation of the entire living diversity of hierofalcons seems to have taken place in the Eemian interglacial at the start of the Late Pleistocene, a mere 130,000-115,000 years ago; the Saker Falcon represents a lineage that expanded out of northeastern Africa into the interior of southeastern Europe and Asia, by way of the eastern Mediterranean region.^[2]

In captivity, Lanner and Saker can interbreed. For example, one such hybrid lives at the African Lion Safari in Ontario, Canada. Gyrfalcon-Saker hybrids are also available (see bird flu experiment described in "Ecology and status").

A Hungarian mythological bird, the Turul, was probably a saker falcon (Kerecsensólyom).^[3]

Ecology and status

The Saker Falcon is a raptor of open grasslands preferably with some trees or cliffs. It often hunts by horizontal pursuit, rather than the Peregrine's stoop from a height, and feeds mainly on rodents and birds. In Europe, Ground Squirrels and feral pigeons are the most common prey items. This species usually builds no nest of its own, but lays its 3-6 eggs in an old stick nest in a tree which was previously used by other birds such as storks, ravens or buzzards. It also often nests on cliffs.

BirdLife International categorises this bird as endangered, due to a rapid population decline, particularly on the central Asian breeding grounds. Ever since the collapse of the Soviet Union, the United Arab Emirates has been the main destination for thousands of falcons caught and sold illegally for hefty sums at the black market. Kazakhstan is estimated to lose up to 1,000 Saker Falcons per year.^[4]

The species also faces pressure from habitat loss and destruction. The population was estimated to be between 7,200 and 8,800 mature individuals in 2004. In the United States there are several captive breeding projects. There are currently several successful breeding projects by falconers in Canada. The most dramatic decline of the Saker falcon

in Asia has been in Kazakhstan and Uzbekistan. On the contrary, a strongly protected and relatively abundant population persist in Hungary.

Saker nests support a species-rich assemblage of commensal insects (Merkl et al. 2004).

Saker Falcons are known to be very susceptible to avian influenza, individuals having been found infected with highly pathogenic H5N1 (in Saudi Arabia) and H7N7 (in Italy) strains. Therefore an experiment was done with hybrid gyr-saker falcons, which found that 5 falcons vaccinated with a commercial H5N2 influenza vaccine survived infection with a highly pathogenic H5N1 strain, whereas 5 unvaccinated falcons died. This means that Sakers could be protected from bird flu by vaccination, at least in captivity.^[5]

In culture

Saker Falcon is the national bird of Hungary, known as Turul in the Hungarian mythology.

Etymology

The specific part of the scientific name, *cherrug*, comes from the Hindi name *charg* for a female Saker.^[1] The common name *Saker* comes from the Arabic *saqr*.^[6]



A saker falcon (Turul) monument at Tatabánya, Hungary.

Footnotes

[2] Helbig et al. (1994), Wink et al. (1998), Wink et al. (2004), Nittinger et al. (2005)

[3] Laszlo Molnar: Saker Falcon protection in Eastern Europe (<http://www.savethesaker.com/images/falco17.pdf>)

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External links

- BirdLife International Species Factsheet (http://www.birdlife.org/datazone/search/species_search.html?action=SpcHTMDetails.asp&sid=3619&m=0)
 - Southeast Europe Saker falcon Network (<http://www.cherrug.org>)
 - Live 24hr view of a Saker Falcon nest (<http://sakerlife2.mme.hu/en/content/webcam-1>)
-

Altai Falcon

Altai falcon	
Scientific classification	
Kingdom:	Animalia
Phylum:	Chordata
Class:	Aves
Order:	Falconiformes
Family:	Falconidae
Genus:	<i>Falco</i>
Subgenus:	(<i>Hierofalco</i>)
Species:	<i>F. cherrug</i> x <i>F. rusticolus</i> hybrid?
Subspecies:	<i>F. cherrug altaicus</i> ?
Trinomial name	
Falco cherrug altaicus ? (Menzbier MA, 1891)	
Synonyms	
<i>Hierofalco altaicus</i> Menzbier, 1891 <i>Falco altaicus</i> (Menzbier, 1891) <i>Falco lorenzi</i> Sushkin, 1938	

The **Altai falcon** (*Falco cherrug altaicus*)(?) is a large falcon of questionable taxonomic position. It is often considered to be a subspecies of the Saker falcon (*Falco cherrug*). It used to have a high reputation among Central-Asian falconers. This is the reason why some speculate that the Hungarians' mythical turul might have been identical with the Altai falcon. It is uncertain whether the bird is a Saker subspecies or a hybrid.

Distribution and taxonomy

The Altai breeds in a relatively small area of Central Asia across the Altai and Sayan Mountains. This area overlaps with the much larger breeding area of the Saker falcon (*Falco cherrug*). It appears that Altai falcons are either natural hybrids between Sakers and Gyrfalcons (*Falco rusticolus*), or rather the descendants of such rare hybrids back-crossing into the large population of Sakers.

So far, molecular genetic studies can not prove or falsify the hybrid hypothesis. Gyrfalcons are rare winter vagrants to the Altai's range. The high altitude cold grasslands of the region constitute habitat intermediate between typical Saker habitat (temperate lowland steppes) and typical Gyrfalcon habitat (arctic tundra). These two species of falcons also easily hybridise in captivity.

Thus the Altai falcon is tentatively considered to be a Saker subspecies *Falco cherrug altaicus*. It tends to be larger than typical Sakers and has red-backed, brownish and greyish colour varieties.

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External Links to rare Photos

- Altai falcon, Western Mongolia ^[4]
- Altai falcon, Western Mongolia ^[5]
- Altai falcon, Kazakhstan ^[6]

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Gyrfalcon

Gyrfalcon or Gerfalcon	
	
Conservation status	
<div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;"> <p>Extinct</p> <p>EX</p> </div> <div style="text-align: center;"> <p>EW</p> </div> <div style="text-align: center;"> <p>Threatened</p> <p>CR</p> </div> <div style="text-align: center;"> <p>EN</p> </div> <div style="text-align: center;"> <p>VU</p> </div> <div style="text-align: center;"> <p>NT</p> </div> <div style="text-align: center;"> <p>Least Concern</p> <p>LC</p> </div> </div> <p>Least Concern (IUCN 3.1)^[1]</p>	
Scientific classification	
Kingdom:	Animalia
Phylum:	Chordata
Class:	Aves
Order:	Falconiformes
Family:	Falconidae
Genus:	<i>Falco</i>
Subgenus:	<i>Hierofalco</i>
Species:	<i>F. rusticolus</i>
Binomial name	
<p><i>Falco rusticolus</i> Linnaeus, 1758</p>	
Synonyms	

The **Gyrfalcon** (/ˈdʒɜːrfɔːlkən/ or /ˈdʒɜːrfælkən/), also spelled **gerfalcon**, — ***Falco rusticolus*** — is the largest of the falcon species. The Gyrfalcon breeds on Arctic coasts and the islands of North America, Europe, and Asia. It is mainly a resident there also, but some Gyrfalcons disperse more widely after the breeding season, or in winter. Individual vagrancy can take birds for long distances. The Gyrfalcon is dispersed throughout much of the Northern Hemisphere, with populations in Northern America, Greenland, and Northern Europe. Its plumage varies with location, with birds being coloured from all-white to dark brown. For centuries, gyrfalcon has been a precious hunting bird, highly valued among the Vikings. It is the national symbol of Iceland.

The bird's common name comes from French *gerfaucon*; in medieval Latin it is *gyrofalco*. The first part of the word may come from Old High German *gîr* (cf. modern German *Geier*) for "vulture", referring to its size compared to other falcons; or from the Latin *gýrus* for "circle" or "curved path"—from the species' circling as it searches for prey, distinct from the hunting of other falcons in its range.^[1] The male Gyrfalcon is called a **gyrkin** in falconry. The

scientific name is composed of the Latin term for a falcon, *Falco*, and for a countryside-dweller, *rusticolus*.

Description

The gyrfalcon is a very large falcon, being about the same size as the largest buteos (buzzard hawks). Males are 48 to 61 cm (19 to 24 in) long, weigh 805 to 1350 g (1.8 to 3 lbs) and have a wingspan from 110 to 130 cm (43 to 51 in). Females are bulkier and larger, at 51 to 65 cm (20 to 26 in) long, 124 to 160 cm (49 to 64 in) wingspan, and of 1180 to 2100 g (2.6 to 4.6 lbs) weight. Among standard measurements, the wing chord is 34.5 to 41 cm (13.6 to 16 in), the tail is 19.5 to 29 cm (7.7 to 11 in), the culmen is 2 to 2.8 cm (0.79 to 1.1 in) and the tarsus is 4.9 to 7.5 cm (1.9 to 3.0 in).^[2] The Gyrfalcon is larger than the Peregrine Falcon (which it is known to hunt) and differs from the buzzard in general structure, being unmistakably a falcon with pointed wings, and broader-winged and longer-tailed than the Peregrine.

The Gyrfalcon is a very polymorphic species, so its plumage varies greatly. The archetypal morphs are called "white", "silver", "brown", and "black", though they can be coloured on a spectrum that begins with all-white and ends with very dark. The brown form of the Gyrfalcon is distinguished from the Peregrine by the cream streaking on the nape and crown and by the absence of a well-defined malar stripe and cap. The black morph has its underside strongly spotted black, rather than finely barred as in the Peregrine. White form Gyrfalcons are unmistakable, as they are the only predominantly white falcons. Silver gyrfalcons resemble a light grey Lanner Falcon of larger size. There is no difference in colouring between males and females; and juveniles are darker and browner than the corresponding adults.

The black color seems to be sex-linked and to occur mostly in females; it proved difficult for breeders to get males darker than the dark side of slate grey. A color variety that arose in captive breeding is "black chick".^[3]



Painting of a Greenland white morph (center), an intermediate (lower left) and black morph (back)



A light silver-morph



Male with a darker "silver" coloration



Painting of brown morph adult (center) and juveniles

Systematics and evolution

The Gyr Falcon is a member of the hierofalcon complex. In this group, there is ample evidence for hybridisation and incomplete lineage sorting which confounds analyses of DNA sequence data to a massive extent. The radiation of the entire living diversity of hierofalcons took place in approximately the Eemian Stage at the start of the Late Pleistocene. It represents lineages that expanded into the Holarctic and adapted to local conditions; this is in contrast to less northerly populations of northeastern Africa (where the radiation probably originated) which evolved into the Saker Falcon. Gyrfalcons hybridize not infrequently with Sakers in the Altai Mountains and this gene flow seems to be the origin of the Altai Falcon.^{[4][5][6]}



There is some correlation between locality and colour morph. Greenland Gyrfalcons are lightest, with white plumage flecked with grey on the back and wings being most common. Other subpopulations have varying amounts of the darker morphs: the Icelandic birds tend towards pale, whereas the Eurasian populations are considerably darker and typically incorporate no white birds. Natural separation into regional subspecies is prevented by Gyrfalcons' habit of flying long distances whilst exchanging alleles between subpopulations; thus, the allele distributions for the color polymorphism form clines and in darker birds^[7] of unknown origin, theoretically any allele combination might be present. For instance, a mating of a pair of captive Gyrfalcons is documented to have produced a clutch of 4 young: one white, one silver, one brown, and one black. Molecular work suggests that plumage color is associated with the melanocortin 1 receptor gene (MC1R), where a nonsynonymous point substitution was perfectly associated with the white/melanic polymorphism.



Adult *F. r. islandus* at Dimmuborgir near Lake Myvatn (Iceland)

In general, geographic variation follows Bergmann's Rule for size and the demands of crypsis for plumage coloration. Several subspecies have been named according to perceived differences between populations^{[8][9]} but none of these are consistent and thus no living subspecies are accepted today. Perhaps the Icelandic population described as *Falco rusticolus islandus* is the most distinct. The predominantly white Arctic forms are parapatric and seamlessly grade into the subarctic populations, whereas the birds of Iceland have presumably less gene flow with their neighbors and indeed show less variation in plumage colors and often look quite similar to a large, washed-out Peregrine Falcon (although their habitus is different). Comprehensive phylogeographic studies to determine the proper status of the Icelandic population have yet to be determined.^{[9][10]}

A population genetic study,^[1] however, identified the Iceland population as genetically unique relative to other sampled populations in both eastern and western Greenland, Canada, Alaska and Norway. Further, within Greenland, differing levels of gene flow between western and eastern sampling locations was identified with apparent asymmetric dispersal in western Greenland from north to south. This dispersal bias is in agreement with the distribution of plumage colour variants with white Gyrfalcons in much higher proportion in north Greenland.^[1] Although further work is required to determine the ecological factors contributing to these distributions relative to plumage differences, a study using demographic data suggested that plumage color distribution in Greenland may be influenced by nesting chronology with white individuals and pairs laying eggs earlier in the breeding season and producing more offspring.^[1]

A paleosubspecies, *Falco rusticolus swarthi*, existed during the Late Pleistocene (125,000 to 13,000 years ago). Fossils found in Little Box Elder Cave (Converse County, Wyoming), Dark Canyon Cave (Eddy County, New

Mexico), and McKittrick, California were initially described as *Falco swarthi* ("Swarth Falcon" or more properly "Swarth's Gyrfalcon") on account of their distinct size. They have meanwhile proven to be largely inseparable from those of living Gyrfalcons, except for being somewhat larger.^{[1][2][3]}

Swarth's Gyrfalcon was on the upper end of the present Gyrfalcon's size range, strong females even surpassing it.^[4] It seems to have had some adaptations to the temperate semiarid climate that predominated in its range during the last ice age. Ecologically more similar to the Siberian populations of today (which are generally composed of smaller birds) or to the Prairie Falcon, this population of temperate steppe habitat must have preyed on landbirds and mammals rather than the water—and on the seabirds which make up much of the American Gyrfalcon's diet today.

Ecology

The Gyrfalcon was originally thought to be a bird of tundra and mountains only, however, in June 2011 it was revealed that it spends considerable periods during the winter on sea ice far from land.^[11] It feeds only on birds and mammals, the latter of which it takes more regularly than many other *Falco* species. Like other hierofalcons, it usually hunts in a horizontal pursuit, rather than with the peregrine's speedy stoop from a height. Most prey is killed on the ground, whether they are captured there or, if the victim is a flying bird, forced to the ground. The diet is to some extent opportunistic, but a majority of breeding birds mostly rely on *Lagopus* grouse and avian marine species on coastal habitats. Avian prey can range in size from redpolls to geese and can include gulls, corvids, smaller passerines, waders, and other raptors (up to the size of *Buteos*). Mammalian prey can range in size from shrews to marmots (sometimes thrice the weight of the assaulting falcon), and often includes lemmings, voles, ground squirrels, and hares. They are rarely observed eating carrion.

Breeding

The Gyrfalcon almost invariably nests on cliff faces. Breeding pairs do not build their own nests, and often use a bare cliff ledge or the abandoned nest of other birds, particularly Golden Eagles and Common Ravens. The clutch can range from 1 to 5 eggs, but is usually 2 to 4. The average size of an egg is 58.46×45 mm (2.31×1.8 in); the average weight is 62 g (2.2 oz). The incubation period averages 35 days, with the chicks hatching at a weight of around 52 g (1.8 oz). The nestlings are brooded usually for 10 to 15 days and leave the nest at 7 to 8 weeks. At 3 to 4 months of age, the immature gyrfalcons become independent of their parents, though they may associate with their siblings through the following winter.

The only natural predator of Gyrfalcons are Golden Eagles and even they rarely engage with these formidable falcons. Gyrfalcons have been recorded as aggressively harassing animals that come near their nests, although Common Ravens are the only predators known to successfully pick off Gyrfalcon eggs and hatchlings. Even brown bears have been reportedly dive-bombed. Humans, whether accidentally (automobile collisions or poisoning of carrion to kill mammalian scavengers) or intentionally (through hunting), are the leading cause of death for Gyrfalcons. Gyrfalcons that survive into adulthood can live up to 20 years of age.



Falco rusticolus egg



A chick hatched in captivity

As *F. rusticolus* has such a wide range, it is not considered a threatened species by the IUCN.^[1] It is not much affected by habitat destruction, but pollution, for instance by pesticides, depressed its numbers in the mid-20th century, and until 1994 it was considered "Near Threatened". Improving environmental standards in developed countries have allowed the birds to make a comeback, and today they are not considered rare or endangered.^[1]

Interaction with humans

The Gyrfalcon has long associated with humans, who have found them useful primarily for hunting and the art of falconry. It is today the official bird of Canada's Northwest Territories. The white falcon in the crest of the Icelandic Republic's coat of arms is a variety of Gyrfalcon.

In the medieval era, the Gyrfalcon was considered a royal bird. The geographer and historian Ibn Said al-Maghribi (d. 1286) described certain northern Atlantic islands west of Ireland where these falcons would be brought from, and how the Egyptian Sultan paid 1,000 dinars for each Gyrfalcon (or, if it arrived dead, 500 dinars).^[12] Due to its rarity and the difficulties involved in obtaining it, in European falconry the Gyrfalcon was reserved for kings and nobles; very rarely was a man of lesser rank seen with a Gyrfalcon on his fist.^[13]

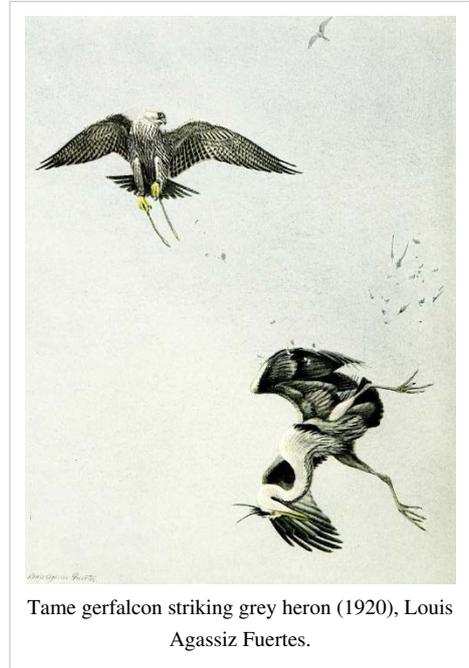
In the 12th century AD China, swan-hunting with Gyrfalcons (海东青 *hǎidōngqīng* in Chinese) obtained from the Jurchen tribes became fashionable among the Khitan nobility. When demand for Gyrfalcons exceeded supply, the Liao Emperor imposed a tax payment-in-kind of Gyrfalcons on the Jurchen; under the last Liao emperor, tax collectors were entitled to use force to procure sufficient Gyrfalcons. This was one cause of the Jurchen rebellion, whose leader Wányán Āgǔdǎ annihilated the Liao empire in 1125, and established the Jīn Dynasty in its stead.^[14]

Gyrfalcons are today expensive to buy, and thus owners and breeders may keep them secret to avoid theft. They can and often do fly long distances, and falconers may fit a radio-tracker to aid recovery. Wild Gyrfalcons are not much exposed to disease, and as a result have immune systems that are naive to many avian pathogens found around human environments. As a result, many Gyrfalcons taken from the wild quickly die of disease.^[15]

Falcons are known to be very susceptible to avian influenza. Therefore an experiment was done with hybrid gyr-saker falcons, which found that 5 falcons vaccinated with a commercial H5N2 influenza vaccine survived infection with a highly pathogenic H5N1 strain, whereas 5 unvaccinated falcons died. Since both wild and captive gyrfalcons are valuable (for wildlife conservation and falconry, respectively), this means they can be protected from bird flu by vaccination.^[16]

Notes

- [1] In Scandinavian languages, it is generally named after its use in falconry, whereas the modern Dutch name *giervalk* is peculiarly ambiguous: *Gier* means "vulture", whereas *gieren* means changing the yaw angle to circle in the air.
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Tame gerfalcon striking grey heron (1920), Louis Agassiz Fuyertes.

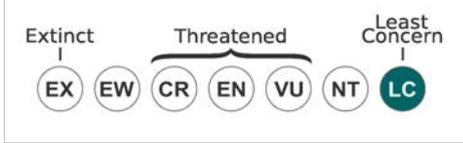
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- [7] The allele combination producing the white morph seems to be recessive.
- [8] *Falco rusticolus candicans* from northern Greenland and adjacent North America which is often very white; *F. r. obsoletus* from the southern Greenland into subarctic North America which is much darker, often brown or black; and *F. r. islandus* (Iceland), *F. r. rusticolus* (Scandinavia including the species' type locality, Sweden), as well as *F. r. intermedius* and *F. r. grebnitzkii* (Siberia), which all tend towards more or less dark "silver" coloration.
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External links

- <http://www.falconryforum.co.uk>
- <http://www.falconscanada.com/site/Welcome.html>
- <http://www.kentishfalconry.co.uk/>
- <http://www.Gyrfalcons.co.uk/>
- <http://www.mosquitonet.com/~akfalconer/AlaskaFalcons>
- Gyr Falcon Species Account (<http://www.birds.cornell.edu/AllAboutBirds/BirdGuide/Gyrfalcon.html>) – Cornell Lab of Ornithology
- Stamps (<http://www.bird-stamps.org/cspecies/3205800.htm>) (with RangeMap)
- Gyr Falcon photo gallery (<http://vireo.acnatsci.org/search.html?Form=Search&SEARCHBY=Common&KEYWORDS=Gyrfalcon&showwhat=images&AGE=All&SEX=All&ACT=All&Search=Search&VIEW=All&ORIENTATION=All&RESULTS=24>) VIREO
- Videos and photo of Gyr Falcon (<http://ibc.lynxeds.com/species/gyrfalcon-falco-rusticolus>) on the Internet Bird Collection

Prairie Falcon

Prairie Falcon	
	
Conservation status	
	
Least Concern (IUCN 3.1) ^[1]	
Scientific classification	
Kingdom:	Animalia
Phylum:	Chordata
Class:	Aves
Order:	Falconiformes
Family:	Falconidae
Genus:	<i>Falco</i>
Species:	<i>F. mexicanus</i>
Binomial name	
<i>Falco mexicanus</i> Schlegel, 1850	
Synonyms	
<i>Gennaia mexicana</i> <i>Hierofalco mexicanus</i>	

The **Prairie Falcon** (*Falco mexicanus*) is a medium-sized falcon of western North America.

It is about the size of a Peregrine Falcon or a crow, with an average length of 40 cm (16 in), wingspan of 1 metre (40 in), and weight of 720 g (1.6 lb). As in all falcons, females are noticeably bigger than males.

It breeds from southern Manitoba, Saskatchewan, Alberta and south-central British Columbia south through the western United States—roughly between the eastern edge of the Mountain Time Zone and the Cascade Mountains, as well as the Central Valley of California—to the Mexican states of Baja California, Durango, and northern San Luis Potosí. It is much less migratory than the other North American falcons, but in winter it does withdraw somewhat from the northernmost and highest-elevation parts of its breeding range and spreads west to the deserts and Pacific coast of California, east to about the 100th meridian, and south to Baja California Sur, Jalisco, and Hidalgo.



A Prairie Falcon in Arizona

Description

Plumage is warm gray-brown (sometimes called "sandy") above and pale with more or less dark mottling below. The darkest part of the upper side is the primary wing feathers; the lightest is the rump and tail, particularly the outer tail feathers. The head has a "moustache" mark like a Peregrine Falcon's but narrower, and a white line over the eye. A conspicuous character is that the axillars ("wingpits") and underwing coverts are black, except along the leading edge of the wing. This creates an effect of "struts" from the body along each wing.

Juveniles resemble adults except that they have dark streaks on the breast and belly and darker, less grayish upperparts.

Calls, heard mostly near the nest, are described as repetitive *kree kree kree...*, *kik kik kik...*, and the like, similar to the Peregrine's but higher-pitched.

Experts can separate a distant Prairie Falcon from a Peregrine (generally the only similar species in its range) by its shape and flight style. The Prairie Falcon has a longer tail in proportion to its size; a more tubular, less stocky body; and the wing joint farther from the body. Its wingbeats are described as strong and shallow like the Peregrine's and having the same quick cadence, but stiffer and more mechanical.^[2]

Systematics

The Prairie Falcon outwardly resembles the Peregrine as well as the Old World "hierofalcons", especially the Saker Falcon. It was often considered the only New World member of the latter group. However, this is implausible for reasons of biogeography, and more recently, *Falco mexicanus* is considered an early aridland offshoot of the Peregrine Falcon lineage, much as the hierofalcons represent a later^[3] divergence that similarly adapted to arid habitat. Thus, the similarities between the Prairie Falcon and the hierofalcons are a good example of convergent evolution, the present species and such Old World forms as the Saker and Lanner Falcons being not close relatives but ecological equivalents.^[4]

Ecology and reproduction

The habitat is open country, especially arid, in summer including alpine tundra to shortgrass prairie and high desert. In winter it is more widespread, ranging to low deserts and occasionally to towns.

The Prairie Falcon eats mostly small mammals (especially in summer) and birds caught in flight. Like the Merlin, it often hunts by flying fast and low, at a height of only a metre or so, hoping to find surprised prey as it comes over the terrain or around a bush. Its cruising speed is estimated at 72 km/h (45 mph) and it accelerates in the chase. It also pursues prey sighted from a perch, again often flying very low. It typically catches birds by pursuing them in level flight and grasping them, less often knocking them down in spectacular dives like the Peregrine.

This species nests on cliff ledges, so breeding adults are local during the breeding season. The clutch averages four eggs, which are subelliptical and pinkish with brown, reddish-brown, and purplish dots. The incubation period is 31 days, beginning with the first egg. Incubation becomes more intense after later eggs are laid, somewhat evening out hatching times. As is typical for falcons, the female does most of the incubating and brooding, and the male brings most of the food, with the female also hunting after the young are 12 to 14 days old. The young fledge from 36 to 41 days after hatching and remain with the family for a short time before dispersing.

Relationship with humans

This species is often used in falconry. Although it is considered hard to train and unpredictable, it's the most popular falcon in the United States, due to its abundance and relative ease to acquire. It is also valued for its aggressiveness (observers of wild birds and veterinarians agree with falconers that it's one of the most aggressive raptors). It is sometimes hybridized with Peregrine Falcons and Gyrfalcons.

The population is estimated to be stable or increasing at over 5000 pairs, with perhaps 200 pairs breeding at the Snake River Birds of Prey National Conservation Area in Idaho.

Gallery



Prairie Falcon - Gyrfalcon hybrid at Avian Conservation Center, near Charleston, South Carolina, USA

Footnotes

- [2] Dunne, Sibley & Sutton (1989)
- [3] Earlier results that suggested the hierofalcons to be the most ancient group of living falcons (Helbig *et al.* 1994, Wink *et al.* 1998) based on mtDNA cytochrome *b* sequence data were in error due to presence of a numt in the hierofalcons (Wink & Sauer-Gürth 2000).
- [4] Helbig *et al.* (1994), Wink *et al.* (1998), Griffiths (1999), Wink & Sauer-Gürth (2000), Wink *et al.* (2004), Nittinger *et al.* (2005)

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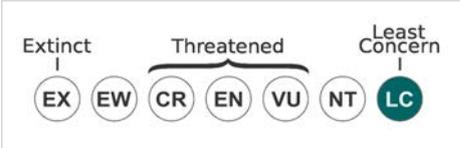
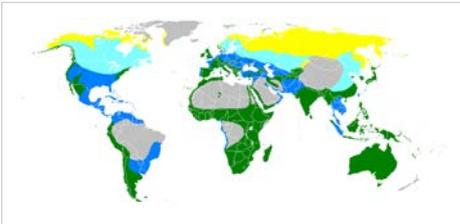
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External links

- Cornell Lab of Ornithology - Prairie Falcon (http://www.birds.cornell.edu/AllAboutBirds/BirdGuide/Prairie_Falcon.html)
- Extensive page from the Snake River Birds of Prey National Conservation Area (<http://www.birdsofprey.blm.gov/nat-res/prfa.htm>)
- Brief page from Ohio Falconry (<http://www.ohiofalconry.org/prairiefalc.html>)
- Picture of Prairie Falcon nestlings and other falcon photos (<http://www.birdwatching-bliss.com/falcon-photos.html>)
- USGS Patuxent Bird Identification InfoCenter - Prairie Falcon (<http://www.mbr-pwrc.usgs.gov/id/framlst/i3550id.html>)
- Prairie Falcon -- VIREO photo gallery (<http://vireo.acnatsci.org/search.html?Form=Search&SEARCHBY=Common&KEYWORDS=prairie+falcon&showwhat=images&AGE=All&SEX=All&>)

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Peregrine Falcon

Peregrine Falcon	
	
Adult with prey in Nova Scotia, Canada	
Conservation status	
	
Least Concern (IUCN 3.1) ^[1]	
Scientific classification	
Kingdom:	Animalia
Phylum:	Chordata
Class:	Aves
Order:	Falconiformes
Family:	Falconidae
Genus:	<i>Falco</i>
Species:	<i>F. peregrinus</i>
Binomial name	
<p><i>Falco peregrinus</i> Tunstall, 1771</p>	
Subspecies	
17–19, see text	
	

Global range
Breeding summer visitor Breeding resident Winter visitor Passage visitor
Synonyms
<i>Falco atriceps</i> Hume <i>Falco kreyenborgi</i> Kleinschmidt, 1929 <i>Falco pelegrinoides madens</i> Ripley & Watson, 1963 <i>Rhynchodon peregrinus</i> (Tunstall, 1771) and see text

The **Peregrine Falcon** (*Falco peregrinus*), also known as the **Peregrine**,^[2] and historically as the **Duck Hawk** in North America,^[3] is a widespread bird of prey in the family Falconidae. A large, crow-sized falcon, it has a blue-grey back, barred white underparts, and a black head and "moustache". As is typical of bird-eating raptors, Peregrine Falcons are sexually dimorphic, females being considerably larger than males. The Peregrine is renowned for its speed, reaching over 322 km/h (200 mph) during its characteristic hunting stoop (high speed dive), making it the fastest member of the animal kingdom. According to a National Geographic program, the highest measured speed of a Peregrine Falcon is 389 km/h (242 mph).^[4]

The Peregrine's breeding range includes land regions from the Arctic tundra to the tropics. It can be found nearly everywhere on Earth, except extreme polar regions, very high mountains, and most tropical rainforests; the only major ice-free landmass from which it is entirely absent is New Zealand. This makes it the world's most widespread raptor^[5] and one of the most widely found bird species. In fact, the only land-based bird species found over a larger geographic area is not always naturally occurring but one widely introduced by humans, the Rock Pigeon, which in turn now supports many Peregrine populations as a prey species. Both the English and scientific names of this species mean "wandering falcon", referring to the migratory habits of many northern populations. Experts recognize 17 to 19 subspecies which vary in appearance and range; there is disagreement over whether the distinctive Barbary Falcon is represented by two subspecies of *Falco peregrinus*, or is a separate species, *F. pelegrinoides*.

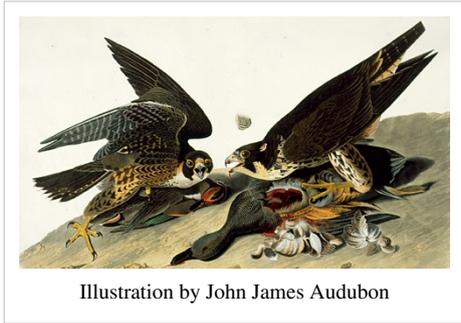
While its diet consists almost exclusively of medium-sized birds, the Peregrine will occasionally hunt small mammals, small reptiles, or even insects. Reaching sexual maturity at one year, it mates for life and nests in a scrape, normally on cliff edges or, in recent times, on tall human-made structures.^[6] The Peregrine Falcon became an endangered species in many areas because of pesticides, especially DDT. Since the ban on DDT from the early 1970s, populations have recovered, supported by large-scale protection of nesting places and releases to the wild.^[7]

Description

The Peregrine Falcon has a body length of 34 to 58 centimetres (13–23 in) and a wingspan from 74 to 120 centimetres (29–47 in). The male and female have similar markings and plumage, but as in many birds of prey the Peregrine Falcon displays marked reverse sexual dimorphism in size, with the female measuring up to 30% larger than the male. Males weigh 424 to 750 grams (0.93–1.7 lb) and the noticeably larger females weigh 910 to 1,500 grams (2.0–3.3 lb). The standard linear measurements of Peregrines are: the wing chord measures 26.5–39 cm (10.4–15 in), the tail measures 13–19 cm (5.1–7.5 in) and the tarsus measures 4.5 to 5.6 cm (1.8 to 2.2 in).^[8]

The back and the long pointed wings of the adult are usually bluish black to slate grey with indistinct darker barring (see "Subspecies" below); the wingtips are black. The white to rusty underparts are barred with thin clean bands of dark brown or black. The tail, coloured like the back but with thin clean bars, is long, narrow, and rounded at the end with a black tip and a white band at the very end. The top of the head and a "moustache" along the cheeks are black, contrasting sharply with the pale sides of the neck and white throat. The cere is yellow, as are the feet, and the beak and claws are black.^[9] The upper beak is notched near the tip, an adaptation which enables falcons to kill prey by severing the spinal column at the neck. The immature bird is much browner with streaked, rather than barred, underparts, and has a pale bluish cere and orbital ring.

Taxonomy and systematics



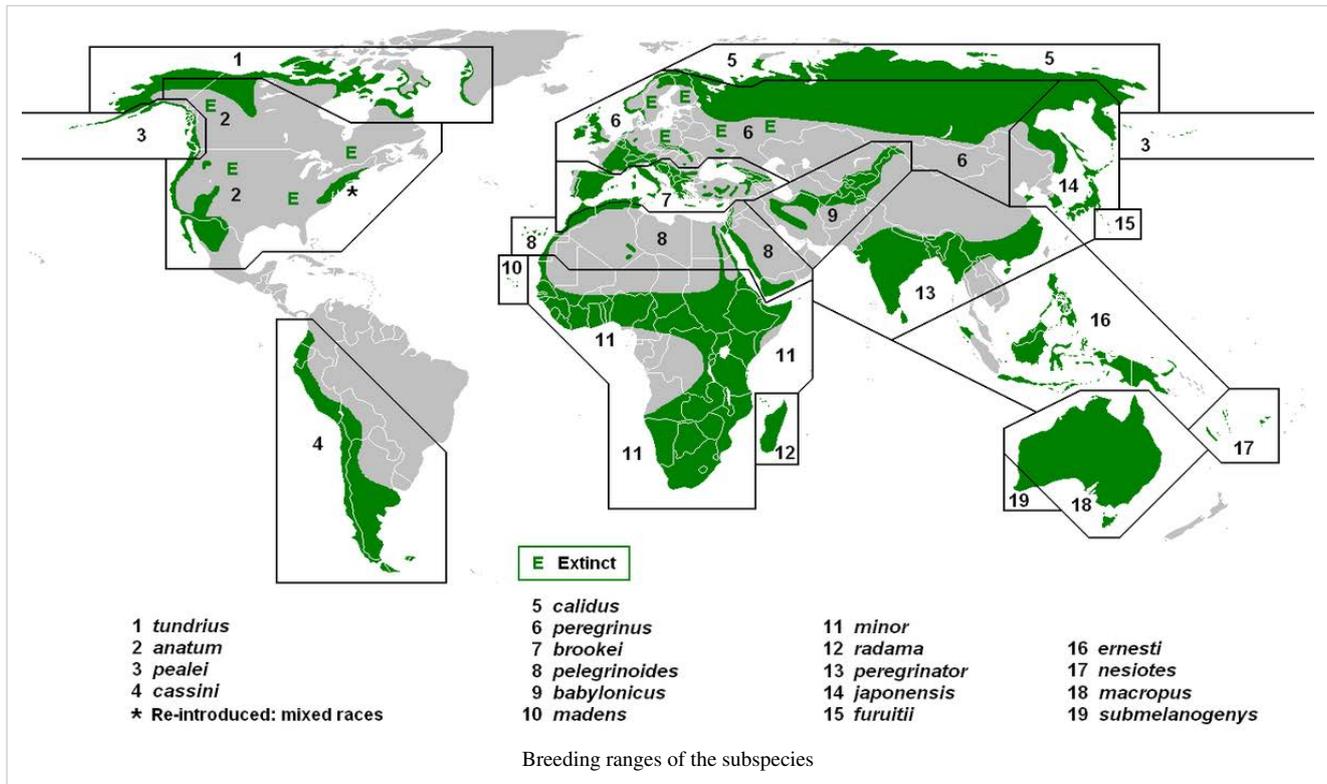
Falco peregrinus was first described under its current binomial name by English ornithologist Marmaduke Tunstall in his 1771 work *Ornithologia Britannica*.^[10] The scientific name *Falco peregrinus* is a Medieval Latin phrase that was used by Albertus Magnus in 1225. The specific name taken from the fact that juvenile birds were taken while journeying to their breeding location rather than from the nest, as falcon nests were difficult to get at.^[11] The Latin term for falcon, *falco*, is related to *falx*, the Latin word meaning sickle, in reference to the silhouette of the falcon's long, pointed wings in flight.

The Peregrine Falcon belongs to a genus whose lineage includes the hierofalcons^[12] and the Prairie Falcon (*F. mexicanus*). This lineage probably diverged from other falcons towards the end of the Late Miocene or in the Early Pliocene, about 5–8 million years ago (mya). As the Peregrine-hierofalcon group includes both Old World and North American species, it is likely that the lineage originated in western Eurasia or Africa. Its relationship to other falcons is not clear; the issue is complicated by widespread hybridization confounding mtDNA sequence analyses; for example a genetic lineage of the Saker Falcon (*F. cherrug*) is known^[13] which originated from a male Saker producing fertile young with a female Peregrine ancestor, and the descendants further breeding with Sakers.^[14]

Today, Peregrines are regularly paired in captivity with other species such as the Lanner Falcon (*F. biarmicus*) to produce the "perilanner", a somewhat popular bird in falconry as it combines the Peregrine's hunting skill with the Lanner's hardiness, or the Gyrfalcon to produce large, strikingly coloured birds for the use of falconers. As can be seen, the Peregrine is still genetically close to the hierofalcons, though their lineages diverged in the Late Pliocene (maybe some 2.5–2 mya in the Gelasian).^[15]

Subspecies

Numerous subspecies of *Falco peregrinus* have been described, with 19 accepted by the 1994 *Handbook of the Birds of the World*,^[16] which considers the Barbary Falcon of the Canary Islands and coastal north Africa to be two subspecies (*pelegrinoides* and *babylonicus*) of *Falco peregrinus*, rather than a distinct species, *F. pelegrinoides*. The following map shows the general ranges of these 19 subspecies:

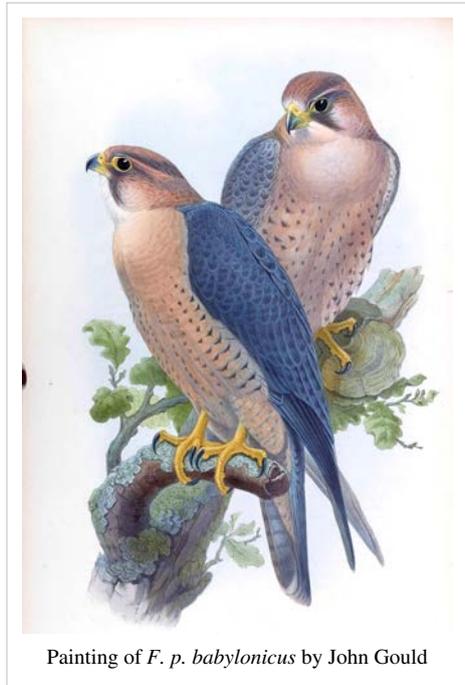


- Falco peregrinus anatum*, described by Bonaparte in 1838,^[17] is known as the American Peregrine Falcon, or "Duck Hawk"; its scientific name means "Duck Peregrine Falcon". At one time, it was partly included in *leucogenys*. It is mainly found in the Rocky Mountains today. It was formerly common throughout North America between the tundra and northern Mexico, where current reintroduction efforts seek to restore the population.^[17] Most mature *anatum*, except those that breed in more northern areas, winter in their breeding range. Most vagrants that reach western Europe seem to belong to the more northern and strongly migratory *tundrius*, only considered distinct since 1968. It is similar to *peregrinus* but is slightly smaller; adults are somewhat paler and less patterned below, but juveniles are darker and more patterned below. Males weigh 500 to 700 grams (1.1–1.5 lb), while females weigh 800 to 1,100 grams (1.8–2.4 lb). It has become extinct in eastern North America, and populations there are hybrids as a result of reintroductions of birds from elsewhere.



F. p. anatum in flight, Morro Bay, California

- *Falco peregrinus babylonicus*, described by P.L. Sclater in 1861, is found in eastern Iran along the Hindu Kush and Tian Shan to Mongolian Altai ranges. A few birds winter in northern and northwestern India, mainly in dry semi-desert habitats.^[1] It is paler than *pelegrinoides*, and somewhat similar to a small, pale Lanner Falcon (*Falco biarmicus*). Males weigh 330 to 400 grams (12 to 14 oz), while females weigh 513 to 765 grams (18.1 to 27.0 oz).^[1]
- *Falco peregrinus brookei*, described by Sharpe in 1873, is also known as the Mediterranean Peregrine Falcon or the Maltese Falcon.^[18] It includes *caucasicus* and most specimens of the proposed race *punicus*, though others may be *pelegrinoides*, Barbary Falcons (see also below), or perhaps the rare hybrids between these two which might occur around Algeria. They occur from the Iberian Peninsula around the Mediterranean, except in arid regions, to the Caucasus. They are non-migratory. It is smaller than the nominate subspecies, and the underside usually has rusty hue.^[1] Males weigh around 445 grams (0.98 lb), while females weigh up to 920 grams (2.0 lb).^[1]
- *Falco peregrinus calidus*, described by John Latham in 1790, was formerly called *leucogenys* and includes *caeruleiceps*. It breeds in the Arctic tundra of Eurasia, from Murmansk Oblast to roughly Yana and Indigirka Rivers, Siberia. It is completely migratory, and travels south in winter as far as South Asia and sub-Saharan Africa. It is often seen around wetland habitats.^[1] It is paler than *peregrinus*, especially on the crown. Males weigh 588 to 740 grams (1.30–1.6 lb), while females weigh 925 to 1,333 grams (2.04–2.94 lb).^[1]
- *Falco peregrinus cassini*, described by Sharpe in 1873, is also known as the Austral Peregrine Falcon. It includes *kreyenborgi*, the Pallid Falcon^[19] a leucistic morph occurring in southernmost South America, which was long believed to be a distinct species.^[1] Its range includes South America from Ecuador through Bolivia, northern Argentina, and Chile to Tierra del Fuego and the Falkland Islands.^[1] It is non-migratory. It is similar to nominate, but slightly smaller with a black ear region. The variation *kreyenborgi* is medium grey above, has little barring below, and has a head pattern like the Saker Falcon, but the ear region is white.^[1]
- *Falco peregrinus ernesti*, described by Sharpe in 1894, is found from Indonesia to Philippines and south to Papua New Guinea and the nearby Bismarck Archipelago. Its geographical separation from *nesiotes* requires confirmation. It is non-migratory. It differs from the nominate subspecies in the very dark, dense barring on its underside and its black ear coverts.
- *Falco peregrinus furuitii*, described by Momiyama in 1927, is found on the Izu and Ogasawara Islands south of Honshū, Japan. It is non-migratory. It is very rare, and may only remain on a single island.^[1] It is a dark form, resembling *pealei* in colour, but darker, especially on tail.^[1]



Painting of *F. p. babylonicus* by John Gould



Juvenile of subspecies *ernesti* in Mount Mahawu, North Sulawesi Indonesia



Adult of subspecies *pealei* or *tundrius* by its nest in Alaska

- *Falco peregrinus japonensis*, described by Gmelin in 1788, includes *kleinschmidti*, *pleskei*, and *harterti*, and seems to refer to intergrades with *calidus*. It is found from northeast Siberia to Kamchatka (though it is possibly replaced by *pealei* on the coast there) and Japan. Northern populations are migratory, while those of Japan are resident. It is similar to *peregrinus*, but the young are even darker than those of *anatum*.
- *Falco peregrinus macropus*, described by Swainson in 1837, is the Australian Peregrine Falcon. It is found in Australia in all regions except the southwest. It is non-migratory. It is similar to *brookei* in appearance, but is slightly smaller and the ear region is entirely black. The feet are proportionally large.^[1]
- *Falco peregrinus madens*, described by Ripley and Watson in 1963, is unusual in having some sexual dichromatism. If the Barbary Falcon (see below) is considered a distinct species, it is sometimes placed therein. It is found in the Cape Verde Islands, and is non-migratory;^[1] it is endangered with only six to eight pairs surviving.^[1] Males have a rufous wash on crown, nape, ears, and back; underside conspicuously washed pinkish-brown. Females are tinged rich brown overall, especially on the crown and nape.^[1]
- *Falco peregrinus minor*, first described by Bonaparte in 1850. It was formerly often *perconfusus*.^[20] It is sparsely and patchily distributed throughout much of sub-Saharan Africa and widespread in Southern Africa. It apparently reaches north along the Atlantic coast as far as Morocco. It is non-migratory, crow-sized, and dark coloured.
- *Falco peregrinus nesiotes*, described by Mayr in 1941,^[21] is found in Fiji and probably also Vanuatu and New Caledonia. It is non-migratory.^[22]



F. p. macropus, Australia



F. p. minor, illustration by Keulemans, 1874

- *Falco peregrinus pealei*, described by Ridgway in 1873, is also known as Peale's Falcon, and includes *rudolfi*.^[23] It is found in the Pacific Northwest of North America, northwards from the Puget Sound along the British Columbia coast (including the Queen Charlotte Islands), along the Gulf of Alaska and the Aleutian Islands to the far eastern Bering Sea coast of Russia,^[23] and may also occur on the Kuril Islands and the coasts of Kamchatka. It is non-migratory. It is the largest subspecies, and it looks like an oversized and darker *tundrius* or like a strongly barred and large *anatum*. The bill is very wide.^[24] Juveniles occasionally have pale crowns. Males weigh 700 to 1,000 grams (1.5–2.2 lb), while females weigh 1,000 to 1,500 grams (2.2–3.3 lb).[□]
- *Falco peregrinus pelegrinoides*, first described by Temminck in 1829, is found in the Canary Islands through north Africa and the Near East to Mesopotamia. It is most similar to *brookei*, but is markedly paler above, with a rusty neck, and is a light buff with reduced barring below. It is smaller than the nominate subspecies; females weigh around 610 grams (1.3 lb).
- *Falco peregrinus peregrinator*, described by Sundevall in 1837, is known as the Indian Peregrine Falcon, Black Shaheen, Indian Shaheen [25] or Shaheen Falcon. It was formerly sometimes known as *Falco atriceps* or *Falco shaheen*. Its range includes South Asia from Pakistan across India and Bangladesh to Sri Lanka and Southeastern China. In India, the Shaheen is reported from all states except Uttar Pradesh, mainly from rocky and hilly regions. The Shaheen is also reported from the Andaman and Nicobar Islands in the Bay of Bengal. It has a clutch size of 3 to 4 eggs, with the chicks fledging time of 48 days with an average nesting success of 1.32 chicks per nest. In India, apart from nesting on cliffs, it has also been recorded as nesting on man-made structures such as buildings and cellphone transmission towers. A population estimate of 40 breeding pairs in Sri Lanka was made in 1996.[26] It is non-migratory, and is small and dark, with rufous underparts. In Sri Lanka this species is found to favour the higher hills while the migrant *calidus* is more often seen along the coast.[27]
- *Falco peregrinus peregrinus*, the nominate (first-named) subspecies, described by Tunstall in 1771, breeds over much of temperate Eurasia between the tundra in the north and the Pyrenees, Mediterranean region and Alpide belt in the south.^[17] It is mainly non-migratory in Europe, but migratory in Scandinavia and Asia. Males weigh 580 to 750 grams (1.3–1.7 lb), while females weigh 925 to 1,300 grams (2.04–2.9 lb).[□] It includes *brevirostris*, *germanicus*, *rhenanus*, and *riphaeus*.
- *Falco peregrinus radama*, described by Hartlaub in 1861, is found in Madagascar and Comoros. It is non-migratory.[□]
- *Falco peregrinus submelanogenys*, described by Mathews in 1912, is the Southwest Australian Peregrine Falcon. It is found in southwest Australia and is non-migratory.
- *Falco peregrinus tundrius*, described by C.M. White in 1968, was at one time included in *leucogenys* It is found in the Arctic tundra of North America to Greenland, and migrates to wintering grounds in Central and South America.^[24] Most vagrants that reach western Europe belong to this subspecies, which was previously united with *anatum*. It is the New World equivalent to *calidus*. It is smaller than *anatum*. It is also paler than *anatum*; most have a conspicuous white forehead and white in ear region, but the crown and "moustache" are very dark, unlike in *calidus*.^[24] Juveniles are browner, and less grey, than in *calidus*, and paler, sometimes almost sandy, than in *anatum*. Males weigh 500 to 700 grams (1.1–1.5 lb), while females weigh 800 to 1,100 grams (1.8–2.4 lb).[□]



Captive *Falco peregrinus pealei*

Barbary Falcon

Two of the subspecies listed above (*Falco peregrinus pelegrinoides* and *F. p. babylonicus*) are often instead treated together as a distinct species, *Falco pelegrinoides* (Barbary Falcon),^[1] although they were included within *F. peregrinus* in the 1994 *Handbook of the Birds of the World*.^[1] These birds inhabit arid regions from the Canary Islands along the rim of the Sahara through the Middle East to Central Asia and Mongolia.

Barbary Falcons have a red neck patch but otherwise differ in appearance from the Peregrine proper merely according to Gloger's Rule, relating pigmentation to environmental humidity.^[28] The Barbary Falcon has a peculiar way of flying, beating only the outer part of its wings like fulmars sometimes do; this also occurs in the Peregrine, but less often and far less pronounced.^[1] The Barbary Falcon's shoulder and pelvis bones are stout by comparison with the Peregrine, and its feet are smaller.^[29] Barbary Falcons breed at different times of year than neighboring Peregrine Falcon subspecies,^{[1][16][30][31][32][33][34]} but there are no postzygotic reproduction barriers in place.^[35] There is a 0.6–0.7% genetic distance in the Peregrine-Barbary Falcon ("peregrinoid") complex.^[30]

Another subspecies of *Falco peregrinus*, *madens*, has also sometimes been treated instead within a separately recognized *F. pelegrinoides*.^[1]

Ecology and behavior



Closeup of head showing nostril tubercle

The Peregrine Falcon lives mostly along mountain ranges, river valleys, coastlines, and increasingly in cities.^[1] In mild-winter regions, it is usually a permanent resident, and some individuals, especially adult males, will remain on the breeding territory. Only populations that breed in Arctic climates typically migrate great distances during the northern winter.^[1]

The Peregrine Falcon reaches faster speeds than any other animal on the planet when performing the stoop,^[1] which involves soaring to a great height and then diving steeply at speeds of over 320 km/h (200 mph), hitting one wing of its prey so as not to harm itself on impact.^[1] The air pressure from a 200 mph (320 km/h) dive could possibly damage a bird's lungs, but small bony tubercles on a falcon's nostrils guide the powerful airflow away from the nostrils, enabling the bird to breathe more easily while diving by reducing the change in air pressure.^[36] To protect their eyes, the falcons use their nictitating membranes (third eyelids) to spread tears and clear debris from their eyes while maintaining vision. A study testing the flight physics of an "ideal falcon" found a theoretical speed limit at 400 km/h (250 mph) for low altitude flight and 625 km/h (390 mph) for high altitude flight.^[37] In 2005, Ken Franklin recorded a falcon stooping at a top speed of 389 km/h (242 mph).^[1]

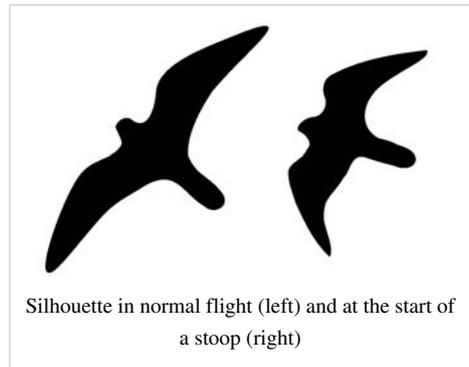


Flying in California, USA

The life span of Peregrine Falcons in the wild is up to 15.5 years.^[1] Mortality in the first year is 59–70%, declining to 25–32% annually in adults.^[1] Apart from such anthropogenic threats as collision with

human-made objects, the Peregrine may be killed by eagles or large owls.^[38]

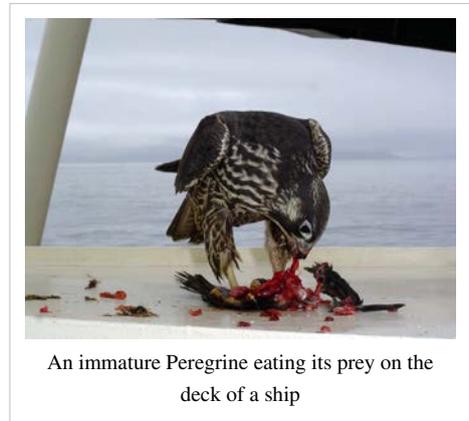
The Peregrine Falcon is host to a range of parasites and pathogens. It is a vector for Avipoxvirus, Newcastle disease virus, Falconid herpesvirus 1 (and possibly other Herpesviridae), and some mycoses and bacterial infections. Endoparasites include *Plasmodium relictum* (usually not causing malaria in the Peregrine Falcon), Strigeidae trematodes, *Serratospiculum amaculata* (nematode), and tapeworms. Known Peregrine Falcon ectoparasites are chewing lice,^[39] *Ceratophyllus garei* (a flea), and Hippoboscidae flies (*Icosta nigra*, *Ornithoctona erythrocephala*).^[40]



Silhouette in normal flight (left) and at the start of a stoop (right)

Feeding

The Peregrine Falcon feeds almost exclusively on medium-sized birds such as pigeons and doves, waterfowl, songbirds, and waders.^[9] Worldwide, it is estimated that between 1,500 and 2,000 bird species (up to roughly a fifth of the world's bird species) are predated somewhere by these falcons. In North America, prey has varied in size from 3-g hummingbirds to a 3.1-kg Sandhill Crane (killed by a peregrine in a swoop).^[41] Smaller raptors are regularly predated, including smaller falcons such as the American Kestrel.^[42] In urban areas, the main component of the Peregrine's diet is the Rock or Feral Pigeon, which comprise 80% or more of the dietary intake for peregrines in some cities. Other common city birds are also taken regularly, including Mourning Doves, Common Wood Pigeons, Common Swifts, Northern Flickers, Common Starlings, American Robins, Common Blackbirds, and corvids (such as magpies or Carrion, House, and American Crows).[□] Other than bats taken at night,[□] the Peregrine rarely hunts mammals, but will on occasion take small species such as rats, voles, hares, shrews, mice and squirrels. Coastal populations of the large subspecies *pealei* feed almost exclusively on seabirds.[□] In the Brazilian mangrove swamp of Cubatão, a wintering falcon of the subspecies *tundrius* was observed while successfully hunting a juvenile Scarlet Ibis.^[43] Insects and reptiles make up a small proportion of the diet, which varies greatly depending on what prey is available.^[9]



An immature Peregrine eating its prey on the deck of a ship

The Peregrine Falcon hunts at dawn and dusk, when prey are most active, but also nocturnally in cities, particularly during migration periods when hunting at night may become prevalent. Nocturnal migrants taken by Peregrines include species as diverse as Yellow-billed Cuckoo, Black-necked Grebe, Virginia Rail, and Common Quail.[□] The Peregrine requires open space in order to hunt, and therefore often hunts over open water, marshes, valleys, fields, and tundra, searching for prey either from a high perch or from the air.[□] Large congregations of migrants, especially species that gather in the open like shorebirds, can be quite attractive to hunting Peregrines. Once prey is spotted, it begins its stoop, folding back the tail and wings, with feet tucked.[□] Prey is struck and captured in mid-air; the Peregrine Falcon strikes its prey with a clenched foot, stunning or killing it with the impact, then turns to catch it in mid-air.[□] If its prey is too heavy to carry, a Peregrine will drop it to the ground and eat it there. Prey is plucked before consumption.^[36]

Reproduction

The Peregrine Falcon is sexually mature at one to three years of age, but in healthy populations they breed after two to three years of age. A pair mates for life and returns to the same nesting spot annually. The courtship flight includes a mix of aerial acrobatics, precise spirals, and steep dives.^[1] The male passes prey it has caught to the female in mid-air. To make this possible, the female actually flies upside-down to receive the food from the male's talons.

During the breeding season, the Peregrine Falcon is territorial; nesting pairs are usually more than 1 km (0.62 mi) apart, and often much farther, even in areas with large numbers of pairs.^[1] The distance between nests ensures sufficient food supply for pairs and their chicks. Within a breeding territory, a pair may have several nesting ledges; the number used by a pair can vary from one or two to seven in a 16 year period.

The Peregrine Falcon nests in a scrape, normally on cliff edges. The female chooses a nest site, where she scrapes a shallow hollow in the loose soil, sand, gravel, or dead vegetation in which to lay eggs. No nest materials are added.^[1] Cliff nests are generally located under an overhang, on ledges with vegetation. South-facing sites are favoured.^[1] In some regions, as in parts of Australia and on the west coast of Northern North America, large tree hollows are used for nesting. Before the demise of most European peregrines, a large population of peregrines in central and western Europe used the disused nests of other large birds.^[9] In remote, undisturbed areas such as the Arctic, steep slopes and even low rocks and mounds may be used as nest sites. In many parts of its range, Peregrines now also nest regularly on tall buildings or bridges; these human-made structures used for breeding closely resemble the natural cliff ledges that the Peregrine prefers for its nesting locations.^[11]

The pair defends the chosen nest site against other Peregrines, and often against ravens, herons, and gulls, and if ground-nesting, also such mammals as foxes, wolverines, felids, bears and wolves.^[1] Both nests and (less frequently) adults are predated by larger-bodied raptorial birds like eagles, large owls, or Gyrfalcons. Peregrines defending their nests have managed to kill raptors as large as Golden Eagles and Bald Eagles (both of which they normally avoid as potential predators) that have come too close to the nest.^[44]

The date of egg-laying varies according to locality, but is generally from February to March in the Northern Hemisphere, and from July to August in the Southern Hemisphere, although the Australian subspecies *macropus* may breed as late as November, and equatorial populations may nest anytime between June and December. If the eggs are lost early in the nesting season, the female usually lays another clutch, although this is extremely rare in the Arctic due to the short summer season. Generally three to four eggs, but sometimes as few as one or as many as five, are laid in the scrape.^[45] The eggs are white to buff with red or brown markings.^[45] They are incubated for 29 to 33 days, mainly by the female,^[1] with the male also helping with the incubation of the eggs during the day, but only the female incubating them at night. The average number of young found in nests is 2.5, and the average number that fledge is about 1.5, due to the occasional production of infertile eggs and various natural losses of nestlings.^{[36][38]}

After hatching, the chicks (called "eyases"^[46]) are covered with creamy-white down and have disproportionately large feet.^[1] The male (called the "tiercel") and the female (simply called the "falcon") both leave the nest to gather prey to feed the young.^[36] The hunting territory of the parents can extend a radius of 19 to 24 km (12–15 miles) from the nest site.^[47] Chicks fledge 42 to 46 days after hatching, and remain dependent on their parents for up to two months.^[48]



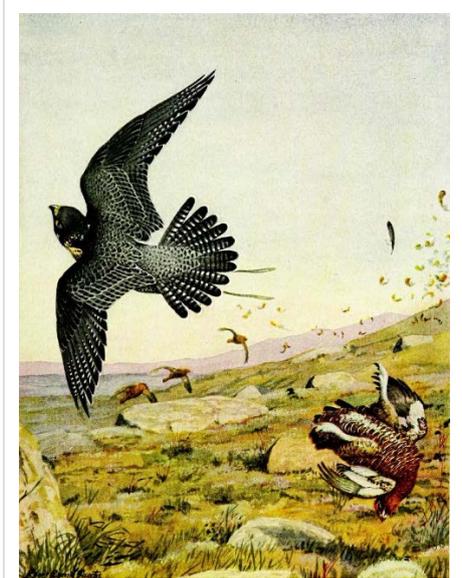
At nest, France

Relationship with humans

Falconry

The Peregrine Falcon has been used in falconry for more than 3,000 years, beginning with nomads in central Asia.^[1] Due to its ability to dive at high speeds, it is highly sought-after and generally used by experienced falconers.^[1] Peregrine Falcons are also occasionally used to scare away birds at airports to reduce the risk of bird-plane strikes, improving air-traffic safety,^[49] and were used to intercept homing pigeons during World War II.^[1]

Peregrine Falcons have been successfully bred in captivity, both for falconry and for release back into the wild.^[50] Until 2004 nearly all Peregrines used for falconry in the US were captive-bred from the progeny of falcons taken before the US Endangered Species Act was enacted and from those few infusions of wild genes available from Canada and special circumstances. Peregrine Falcons were removed from the United States' endangered species list in 1999. The successful recovery program was aided by the effort and knowledge of falconers – in collaboration with The Peregrine Fund and state and federal agencies – through a technique called hacking. Finally, after years of close work with the US Fish and Wildlife Service, a limited take of wild Peregrines was allowed in 2004, the first wild Peregrines taken specifically for falconry in over 30 years. Since Peregrine eggs and chicks are still often targeted by illegal collectors,^[51] it is common practice not to publicize unprotected nest locations.^[52]



Tame peregrine striking a red grouse, by Louis Agassiz Fuertes (1920)

Decline due to pesticides

The Peregrine Falcon became an endangered species because of the use of organochlorine pesticides, especially DDT, during the 1950s, 60s, and 70s.^[53] Pesticide biomagnification caused organochlorine to build up in the falcons' fat tissues, reducing the amount of calcium in their eggshells. With thinner shells, fewer falcon eggs survived to hatching.^[54] In several parts of the world, such as the eastern United States and Belgium, this species became extirpated (locally extinct) as a result.^[48] An alternate point of view is that populations in the eastern North America had vanished due to hunting and egg collection.

Recovery efforts

In the United States, Canada, Germany and Poland, wildlife services in Peregrine Falcon recovery teams breed the species in captivity.^[1] The chicks are usually fed through a chute or with a hand puppet mimicking a Peregrine's head, so they cannot see to imprint on the human trainers. Then, when they are old enough, the rearing box is opened, allowing the bird to train its wings. As the fledgling gets stronger, feeding is reduced forcing the bird to learn to hunt. This procedure is called hacking back to the wild. To release a captive-bred falcon, the bird is placed in a special cage at the top of a tower or cliff ledge for some days or so, allowing it to acclimate itself to its future environment.

Worldwide recovery efforts have been remarkably successful. The widespread restriction of DDT use eventually allowed released birds to breed successfully. The Peregrine Falcon was removed from the U.S. Endangered Species list on August 25, 1999.^[55]

Some controversy has existed over the origins of captive breeding stock used by The Peregrine Fund in the recovery of peregrine falcons throughout the contiguous United States. Several peregrine subspecies were included in the

breeding stock, including birds of Eurasian origin. Due to the extirpation of the Eastern *anatum* (*Falco peregrinus anatum*), the near extirpation of the *anatum* in the Midwest, and the limited gene pool within North American breeding stock, the inclusion of non-native subspecies was justified to optimize the genetic diversity found within the species as a whole.^[56]

***The Peregrine* by J A Baker**

This book by John Alec Baker^{[57][58]} was first published in 1967 and recounts in diary form his observations of peregrines (and their interaction with other birds) near his home in Chelmsford, Essex, England, over a single winter from October to April (probably the very cold winter of 1962/3). It is widely regarded as masterpiece of nature writing. Mark Cocker, for example, regards the book as "one of the most outstanding books on nature in the twentieth century".^[59] Cocker continues, "There is an occasional metaphysical density to the language, but more often he [Baker] described the falcon's actions in passages of radiant lyricism that both express his own burning obsession and restate all the qualities that make the bird such a totem species".^[59]

Current status

Populations of the Peregrine Falcon have bounced back in most parts of the world. In Britain, there has been a recovery of populations since the crash of the 1960s. This has been greatly assisted by conservation and protection work led by the Royal Society for the Protection of Birds. The RSPB has estimated that there are 1,402 breeding pairs in the UK.^{[60][61]} Peregrines now breed in many mountainous and coastal areas, especially in the west and north, and nest in some urban areas, capitalising on the urban Feral Pigeon populations for food.^[62] In Southampton a nest prevented restoration of mobile telephony services for several months, after Vodaphone engineers despatched to repair a faulty transmitter mast discovered a nest in the mast, and were prevented by the Wildlife and Countryside Act, on pain of a possible prison sentence, from proceeding with repairs until the chicks fledged.^[63] In many parts of the world Peregrine Falcons have adapted to urban habitats, nesting on cathedrals, skyscraper window ledges, tower blocks,^[64] and the towers of suspension bridges. Many of these nesting birds are encouraged, sometimes gathering media attention and often monitored by cameras.^{[65][66]}

Cultural significance

Due to its striking hunting technique, the Peregrine has often been associated with aggression and martial prowess. Native Americans of the Mississippian culture (c. 800–1500) used the Peregrine, along with several other birds of prey, in imagery as a symbol of "aerial (celestial) power" and buried men of high status in costumes associating to the ferocity of "raptorial" birds.^[67] In the late Middle Ages, the Western European nobility that used Peregrines for hunting, considered the bird associated with princes in formal hierarchies of birds of prey, just below the Gyrfalcon associated with kings. It was considered "a royal bird, more armed by its courage than its claws". Terminology used by Peregrine breeders also used the Old French term *gentil*, "of noble birth; aristocratic", particularly with the Peregrine.^[68]



Idaho state quarter

The Peregrine Falcon is the national animal of the United Arab Emirates. Since 1927, the Peregrine Falcon has been the official mascot of Bowling Green State University in Bowling Green, Ohio.^[69] The 2007 U.S. Idaho state quarter features a Peregrine Falcon.^[70]

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- [15] Helbig *et al.* (1994), Wink *et al.* (1998), Griffiths (1999), Wink & Sauer-Gürth (2000), Groombridge *et al.* (2002), Griffiths *et al.* (2004), Nittinger *et al.* (2005)
- [16] Vaurie (1961)
- [17] American Ornithologists' Union (1910): p. 164
- [18] Charles V, Holy Roman Emperor levied a rent of these birds on the Knights Hospitaller when he donated the Island of Malta to them. Source of the name for Dashiell Hammett's novel.
- [19] Also called "Kleinschmidt's Falcon", but this might equally refer to *F. p. kleinschmidti* which is a junior synonym of *japonensis*,
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- [21] Mayr (1941)
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- [23] American Ornithologists' Union (1910): p. 165
- [24] Proctor, N. & Lynch, P. (1993): p. 13
- [25] The *shaheen* (شاهين) of Arabic and Persian writers are usually Barbary Falcons; those in Indian (शाहीन) and Pakistani (شاهین) sources normally refer to *peregrinator*.
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- [28] Döttlinger, 2002
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- [31] Helbig *et al.* (1994)
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- [33] Wink & Sauer-Gürth (2000)
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- [37] Tucker (1998)
- [38] Michigan Department of Natural Resources (2007)
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External links



External video

Peregrine Falcon Banding (<http://www.youtube.com/watch?v=183fzaL70kc>), Metropolitan Transportation Authority Bridges and Tunnels; June 3, 2010; 3-minute YouTube video clip

Throgs Neck Bridge Peregrine Banding 2011 (<http://www.youtube.com/watch?v=UXoCqgPRDMU>), Metropolitan Transportation Authority Bridges and Tunnels; May 27, 2011; 10:54 YouTube video clip

Peregrine Falcon Banding 2012 (<http://www.youtube.com/watch?v=pO8-wjTsox0>), Metropolitan Transportation Authority Bridges and Tunnels; June 4, 2012; 2:40 YouTube video clip

- A video of the falcon stooping at a top speed of 389 km/h (242 mph) (<http://www.extremescience.com/zoom/index.php/videos/180-peregrine-falcon-video>).
- Peregrine Falcon (http://www.ibercajalav.net/img/138_PeregrineFalconFperegrinus.pdf), by Javier Blasco-Zumeta & Gerd-Michael Heinze
- Peregrine Falcon – Species text in The Atlas of Southern African Birds (<http://sabap2.adu.org.za/docs/sabap1/171.pdf>).

Conservation organizations

- Arctic Raptors – Ongoing research with raptors in the Canadian Arctic (<http://www.ArcticRaptors.ca/>)
- Falcon Research Group (<http://frg.org/>)
- Peregrine Falcon Fund (<http://peregrinefund.org/>)
- The Canadian Peregrine Foundation (<http://www.peregrine-foundation.ca/>)
- Peregrine Falcon Recovery Project (Manitoba) (<http://www.species-at-risk.mb.ca/pefa/index.html>)
- London Peregrine Partnership (UK) (<http://london-peregrine-partnership.org.uk/>)

Video and other media of Peregrines

- Derby Cathedral Peregrine Project, UK. Links to webcams and video sequences (<http://www.derby.gov.uk/peregrines/>)
- Norwich Cathedral Peregrine Web Cam 2013, UK. (<http://upp.hawkandowl.org/norwich-peregrines/live-peregrine-web-cam-2013/>)
- Peregrine Falcon videos on the Internet Bird Collection (<http://ibc.lynxeds.com/species/peregrine-falcon-falco-peregrinus>)
- The Raptor Resource Project. Links to Peregrine Falcon webcams (<http://www.raptorresource.org/>)
- Peregrines on Brussels Cathedral (<http://www.peregrinefalcons.be/>)
- Photo documentation of Peregrines returning to south California beach cliffs after over 50 years absence (http://www.warwingsart.com/DK/Robert_Horstmann/peregrine_falcons/index.htm)
- Nottingham Trent University, where peregrines return to breed on the top of the Newton building every year. Includes images and webcam. (<http://www.ntu.ac.uk/ecoweb/biodiversity/falcons/index.html>)
- Worcester Peregrine Falcon Project, UK. Includes feeds from 'Peregrines in Worcester' Facebook Fan page, YouTube & Flickr photo groups (<http://www.worcester.gov.uk/peregrine/>)

Peale's Falcon

Peale's Falcon	
	
Female Peale's Falcon	
Scientific classification	
Kingdom:	Animalia
Phylum:	Chordata
Class:	Aves
Order:	Falconiformes
Family:	Falconidae
Genus:	<i>Falco</i>
Species:	<i>F. peregrinus</i>
Subspecies:	<i>F. p. pealei</i>
Trinomial name	
<i>Falco peregrinus pealei</i> Ridgway, 1873	

Peale's Falcon, *Falco peregrinus pealei*, is a subspecies of the Peregrine Falcon. This race was first identified by the ornithologist Robert Ridgway in 1873, named in honor of Titian Ramsay Peale. These birds are the largest subspecies of Peregrines (on average) anywhere in the world.

Description

Measurements for male *F. p. pealei* are as follows: length 16.3 in. (41.4 cm), wingspan 36.2 in. (92.1 cm), wing chord 12.60-13.58 in. (320–345 mm). For females: length 18.7 in. (48 cm), wingspan 43.6 in. (110.8 cm), wing chord 14.29-15.39 in. (363–391 mm)^[1]

Weight range for male *F. p. pealei* are 28.57-37.32 oz. (810-1,058 g), averaging 33.65 oz. (954 g); females range 43.88-56.33 oz. (1,244-1,597 g), averaging 49.31 oz. (1,398 g).^[2]

The adults are generally identified by the presence of heavy horizontal barring across their abdomen, large "tear-drop" shaped markings on their breast (more pronounced in the females) extending up into the auriculars, a white, smokey-white, or grayish background color on the breast (as opposed to the salmon to orangish background color on most other subspecies), very broad malar stripe to a full dark cap, and wider, stronger mandibles than is commonly seen in the species as a whole.

Immature birds are overall very dark, having little to no buff colored edging to the feathers of the mantle. Nearly completely dark heads and very heavily streaked ventral markings. Retrises are usually unbarred. Feet and cere color

varies from light blue to light yellow.

Distribution, Habitat, and Population Status

The breeding range of *F. p. pealei* is a rather linear one being entirely coastal in orientation. Starting in the western part of the range, the Commander Islands are generally thought to be the extent to which they exist in Russia. Although they are speculatively referenced as nesting on the Kamchatka Peninsula and possibly the northern Kurile Islands, no evidence has been provided to support these locations. From the Commander Islands eastward they are found throughout the Aleutian Islands to the Sanak Islands, Cherni Island, Deer Island, the Pavlof Islands, and the Shumagin Islands. This area constitutes the western sub-population of *F. p. pealei* and is an estimated 375-580 breeding pairs^[3] strong in Alaskan territory and 20-25 pairs in Russian territory. This group has a very uniformly and densely distributed population, with roughly 5–8 miles of coastline between each eyrie on average.^[3] This group also has a tendency to be more uniform in morphology.

The Alexander Archipelago, Queen Charlotte Islands, portions of the British Columbia coast, the outer coast of Vancouver Island, and the Olympic Peninsula make up the eastern sub-population of *F. p. pealei*. The highest density of Peregrines anywhere in the world was recorded on Langara Island in the middle 1950's. Ten nests being occupied in a single small bay of only 7.5 mi (12 km) of coastline, and a total of 21 nests on the whole island.^[2] Unfortunately this astounding concentration of Peregrine falcons was intimately linked to the very robust local seabird population that has declined since the 1950s due to unknown factors. Possible culprits for the decline include introduced non-native predators of seabirds such as rats and raccoons, coupled with possible changes brought on by human activities in the oceanic food chain on which the seabird colonies depend. The Peregrine population of Langara Island is now believed to be about 25% of what it once was.^[4] The current population of the eastern sub-group of *F. p. pealei* is about 20 breeding pairs in Washington, about 100 pairs in British Columbia, and about another 100 pairs in the Alexander Archipelago.

Along the south side of the Alaska Peninsula, the Kodiak Islands, portions of Cook Inlet, the Kenai Peninsula, Prince William Sound, and eastward to Glacier Bay constitutes the central sub-population of *F. p. pealei*. This area is marked by a decidedly lower population density than either the eastern or western populations. This fact and the slightly different morphology of this sub-group has caused some confusion amongst researchers as to the validity of *F. p. pealei* existing within this range.^{[2][5]}

Specifically within this range, the Peale's Falcon can be found on rough, rocky seashores, sea cliffs, seastacks, islands, islets, and beaches.

Hunting and Food Habits

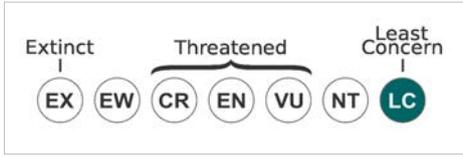
The Peale's falcon is known to concentrate its hunting efforts on Alcids. In fact the subspecies is well known to nest very near seabird colonies for the convenience of close hunting grounds. However this is not necessary for a successful eyrie. In a study on Amchitka Island from 1968-1973, it was found that an average of 18.6 eyries on the island (over the course of the study) were in no close proximity to seabird colonies as no sizable colonies existed on the island.^[3] Instead, these large, robust birds fly out to sea to hunt up to 50 miles from land, rather than inland toward the interior. Which is quite an impressive physical feat as they must either eat their prey while flying or carry the prey back to land to perch and then consume it, as Peregrines are not known to be able to rest and stay afloat on water as seabirds do. Preferred species on Amchitka consisted of: Crested Auklet (*Aethia cristatella*), 26.48% of the diet's biomass; Ancient Murrelet (*Synthliboramphus antiquus*), 17.18% of the biomass; and Alcids as a group provided 65.52% of the biomass.^[6]

Other important prey species that this specialized population of Peregrines are fond of are Fork-tailed Storm-Petrels, Leach's Storm-Petrels, and Black-legged Kittiwakes.

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 - [3] White, C. M., 1975. Studies on Peregrine Falcons in the Aleutian Islands, in *Population Status of Raptors*, J. R. Murphy, C. M. White, and B. E. Harrell (Eds.), Raptor Research Report, No. 3, Raptor Research Foundation, Inc., Vermillion, South Dakota, pp.33-50.
 - [4] Nelson, R. W., and M. T. Myers. 1977. Declines in populations of Peregrine Falcons and their seabird prey at Langara Island, British Columbia. *Condor*. 78:281-293.
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Barbary Falcon

Barbary Falcon	
	
Conservation status	
	
Least Concern (IUCN 3.1) ^[1]	
Scientific classification	
Kingdom:	Animalia
Phylum:	Chordata
Class:	Aves
Order:	Falconiformes
Family:	Falconidae
Genus:	<i>Falco</i>
Species:	<i>F. pelegrioides</i>
Binomial name	
<i>Falco pelegrioides</i> Temminck, 1829	

The **Barbary Falcon** (*Falco pelegrioides*) is a medium-sized falcon about the size of a crow. This bird of prey is mainly resident.

Description

It is a bird of semi-desert and dry open hills. It typically lays its eggs in cliff-ledge nests.

The Barbary Falcon is similar to the Peregrine Falcon, but smaller at 33–39 cm length with a wingspan of 76–98 cm. The female is larger than the male. It resembles its relative in general structure.

Adults have paler grey-blue upperparts than the Peregrine, and often have a buff wash to the barred underparts, whereas the larger species has a white background color. The nape is rufous, but this is difficult to see.

Sexes are similar, apart from size, but the young birds have brown upperparts and streaked underparts. The streaking is lighter than in the juvenile Peregrine.

The call is a high-pitched "rek-rek-rek".

The Barbary Falcon also bears some resemblance to the Lanner Falcon, but can be distinguished from that species at rest by the head-pattern, and in flight, by the proportions, flight action and underwing pattern.^[1]

Distribution

The Barbary Falcon is native to Northern and Eastern parts of Africa (Algeria, Egypt, Eritrea, Morocco, Niger, Sudan, Somalia, Tunisia and Yemen). It is also common in Middle East, Central Asia and South Asia, particularly in Afghanistan, China, India, Iran, Iraq, Israel, Jordan, Kazakhstan, Kuwait, Kyrgyzstan, Libya, Oman, Saudi Arabia, Syria, Tajikistan, Turkmenistan, United Arab Emirates and Uzbekistan. It is vagrant in Burkina Faso, Cameroon, Djibouti, Greece, Italy, Kenya, Lebanon, Mali, Malta, Nepal, Portugal, Qatar, Senegal and Turkey.^[1]

Taxonomy

The Barbary Falcon differs in appearance from the Peregrine Falcon according to Gloger's Rule. The genetic distance is slight and the species form a close-knit and somewhat paraphyletic group in DNA sequence analyses. They differ more in behavior, ecology and anatomy^[2] than usual for conspecifics. They are able to produce fertile hybrids,^[3] but they are generally allopatric and only co-occur during breeding season in small areas such as the Maghreb,^[4] the Punjab, Khorasan, and possibly the Mongolian Altai, and there is clear evidence of assortative mating with hybridization hardly ever occurring under natural conditions. In short, though they occupy adjacent territories, they breed at different times of year and Barbary Falcons virtually never breed with Peregrines in nature.^{[5][6][7][8][9][10][11]}

Assuming a genetic distance of 2% in hierofalcons^[11] corresponds to a divergence roughly 200,000–130,000 years ago,^[12] the 0.6–0.7% genetic distance in the Peregrine-Barbary Falcon ("peregrinoid") complex^[10] suggests its current taxa evolved in the Late Pleistocene some 100,000 years ago or less, but before the Upper Paleolithic. The presumed time of divergence between Peregrine and Barbary Falcons approximately coincides with the start of the last ice age, when desertification was prominent in North Africa and the Middle East, and the Persian Gulf became a landlocked inland sea that slowly dried up. Populations of ancestral "peregrinoid" falcons living in marginal habitat at the fringe of the African-Middle Eastern desert belt either adapted (and might have become isolated e.g. in the Persian Gulf region, which turned into semiarid habitat surrounded by vast deserts), or left for better habitat, or became extinct. During interstadials, deserts receded and the aridland and humidland populations could expand to contact again, causing some limited gene flow. This scenario by and large parallels the proposed evolutionary history of the Saker Falcon in relation to the other hierofalcons; indeed, that group shows similar patterns of molecular parphyly though it is of somewhat earlier origin.^[12]

The fossil record adds little to the issue. A humerus some 9,000 years old (i.e., after the last ice age) from the Aswan area in Sudan, where *Falco peregrinus minor* occurs today, was identified to belong to the Peregrine.^[13] The Barbary Falcon is one of the rare cases that may arguably be considered a species under the Biological, but certainly not under the Phylogenetic Species Concept rather than the other way around as usual. This case demonstrates that what makes a "species" is not only its descent, but also occurs to a population in the course of evolution, how it adapts, and how this affects its reproductive isolation (or lack thereof) from sister taxa.

Notes

- [1] Clark & Shirihai (1995)
- [2] Notably, the Barbary Falcon has a peculiar way of flying, beating only the outer part of its wings like fulmars sometimes do; this also occurs in the Peregrine, but less often and far less pronounced (Snow *et al.* 1998). The Barbary Falcon's shoulder and pelvis bones are unusually stout by comparison with the Peregrine and its feet are smaller (Vaurie, 1961), suggesting that hybridization has not affected the evolution of these traits. It was proposed (Vaurie, 1961) that the Barbary Falcon also has an elongated middle toe, but this seems to be in error (Snow *et al.* 1998).
- [3] White (1994), though as seen above, fertile hybrids may occur between Peregrine Falcons and undoubtedly good and far more distant species. In general terms, the ability to produce fertile offspring is a plesiomorphy initially shared by close relatives; the loss of ability to hybridize successfully is an apomorphy. Hence, the *inability* rather than the ability to produce fertile hybrids is phylogenetically informative.
- [4] Schollaert & Willem (2000)
- [5] Vaurie (1961)
- [6] Helbig *et al.* (1994)
- [7] Snow *et al.* (1998)
- [8] Wink *et al.* (1998)
- [9] Wink & Sauer-Gürth (2000)
- [10] Wink *et al.* (2000)
- [11] Wink *et al.* (2004)
- [12] Nittinger *et al.* (2005)
- [13] Tchernov (1968)

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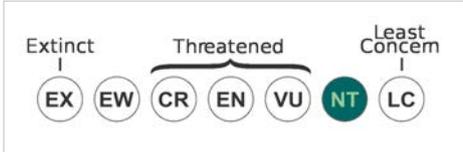
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External links

- Bird Biographies (<http://www.naturalencounters.com/abby1b.html>)
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Taita Falcon

Taita Falcon	
	
Taita Falcon, photographed at the World Center for Birds of Prey, Boise, Idaho, USA.	
Conservation status	
	
Near Threatened (IUCN 3.1) [ⓘ]	
Scientific classification	
Kingdom:	Animalia
Phylum:	Chordata
Class:	Aves
Order:	Falconiformes
Family:	Falconidae
Genus:	<i>Falco</i>
Species:	<i>F. fasciinucha</i>
Binomial name	
<p><i>Falco fasciinucha</i> Reichenow & Neumann, 1895</p>	

The **Taita Falcon** (*Falco fasciinucha*) is a small falcon found in central and eastern Africa. It was first described from the Taita Hills of Kenya from which it derives its name.

Description



Taita falcon photographed at Strydom Tunnel, South Africa

This small falcon is fairly distinctive, but may offer some confusion with a few other species. The rufous belly causes resemblance with African Hobby, but important features to look out for are a white throat and the obvious rufous patches on the nape. Also the underwing coverts are uniform rufous whereas in African Hobby has more streaking. The most obvious underwing feature though is the fact that the flight feathers are barred black and white whereas there is much more rufous in the flight feathers of African Hobby. The robust, long-winged Taita Falcons have a short tail. Their flight is fast and somewhat heavy looking, but they are adept at aerial hunting.

The wingspan of males is 202–208 millimetres (8.0–8.2 in), and that of females is 229–240 millimetres (9.0–9.4 in). Males weigh 212–233 grams (7.5–8.2 oz) and females 297–346 grams

(10.5–12.2 oz).

Behaviour

This species spends much of its time perched inconspicuously, emerging to pursue small birds with fast, parrot-like wingbeats. Occasionally soars high. Prey is captured on the wing and carried back to the perch to be eaten. Breeds during April to September in East Africa and July to December in southern Africa. The nest is normally on bare rock, the clutch size is 2-4 eggs, incubation lasts 31–33 days and the chicks fledge after approximately 42 days.

Distribution and habitat

The Taita Falcon is patchily distributed from eastern and southern Africa. Breeding has been recorded from southern Ethiopia, southeastern Sudan, eastern Uganda, Kenya (may occur at low densities throughout the country), Tanzania (scattered records), eastern Zambia (a few sites), Malawi (two recent records), Zimbabwe (20–50 pairs), Mozambique (one record of unknown reliability), Botswana and northeastern South Africa (one site).^[1] It breeds in highlands and mountain regions with high cliffs and river gorges, mainly in areas with low rainfall. It is a scarce species, with probably around 1,000 adults but the population is probably stable.

Threats to the species come from the use of organochlorine pesticide sprays in northern Zimbabwe which may have reduced numbers there, and pesticide-spraying (e.g. through operations to control Red-billed Quelea and locusts) may pose a threat in other regions. Tourist flights using helicopters and micro-light aircraft seem to have caused major disturbance to birds resident along the Victoria Falls gorges, where the remaining birds are threatened with flooding by a proposed dam. Reasons for its scarcity in East Africa possibly include competition for food and nest sites with the larger and more dominant Peregrine Falcon (*Falco peregrinus*) and predation of young by the Peregrine Falcon, Lanner Falcon (*Falco biarmicus*) and owls.^[1]

In Southern Africa itself, there are a few regular breeding sites where the birds can regularly be found. Formerly there was a famous nest site in the Victoria Falls gorge and more recently there has been a well publicised pair near the Strydom Tunnel in the Limpopo Province of South Africa.^[2]

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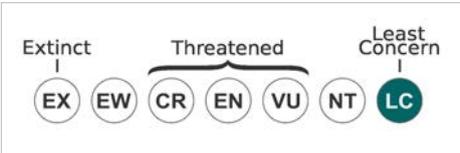
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External links

- Taita Falcon - Species text in *The Atlas of Southern African Birds* (<http://sabap2.adu.org.za/docs/sabap1/176.pdf>).

Pygmy Falcon

Pygmy Falcon	
	
Male in Buffalo Springs National Park, Kenya	
Conservation status	
	
Least Concern (IUCN 3.1) ¹	
Scientific classification	
Kingdom:	Animalia
Phylum:	Chordata
Class:	Aves
Order:	Falconiformes
Family:	Falconidae
Genus:	<i>Polihierax</i>
Species:	<i>P. semitorquatus</i>
Binomial name	
<i>Polihierax semitorquatus</i> (Smith, 1836)	



The **Pygmy Falcon**, or **African Pygmy Falcon** (*Polihierax semitorquatus*), is a falcon that lives in eastern and southern Africa and is the smallest raptor on the continent. As a small falcon, only 19 to 20 cm long, it preys on insects, small reptiles, and small mammals.

Description

Adult Pygmy Falcons are white below and on the face, grey above, and females having a chestnut back. There are white "eye spots" on the nape. Juveniles have a brown back, duller than adult females, and a rufous wash on the breast. The flight feathers of the wings are spotted black and white (more black above, more white below); the tail is barred black and white.^{[[]]}

The flight is low and undulating. In size, pattern, and the habit of perching upright on an exposed branch or treetop, this species resembles some shrikes.^{[[]]}

The call is "a high-pitched *kikiKIK*, repeated" (Kenya)^{[[]]} or "a 'chip-chip' and a 'kik-kik-kik-kik'" (southern Africa).^{[[]]}

Range, habitat, and population

The Pygmy Falcon inhabits dry bush. The subspecies *P. s. castanonotus* occurs from Sudan to Somalia and south to Uganda and Tanzania; *P. s. semitorquatus* occurs from Angola to northern South Africa.^{[[]]} This range is estimated to have an area of 2.7 million km², and the total population is estimated to be between 100,000 and 1 million birds.^{[[]]}

Nesting

In Kenya, Pygmy Falcons nest in White-headed Buffalo Weaver nests, and the ranges of the two birds coincide.^[1] In southern Africa, they are found around Red-billed Buffalo Weaver nests but predominantly nest in the vacant rooms of Sociable Weaver nests,^[1] which are large and multichambered—even if the Sociable Weavers still have an active colony in the nest. Despite being bird-eaters and bigger than Sociable Weavers, the Pygmy Falcons largely leave the latter alone, though they do occasionally catch and eat nestlings and even adults.^[1]

Polyandry

Pygmy Falcons occasionally engage in polyandrous relationships, where there are more than two adults living together and tending nestlings. There are four potential reasons for this behavior: defense, co-operative polyandry, delayed dispersal of offspring, and thermoregulation (warmth). Corroboration for the last is that in winter African Pygmy-falcons nest further inside the nest of Sociable Weavers, where there is better insulation.^[1]

References

External links

- Pygmy Falcon - Species text in The Atlas of Southern African Birds (<http://sabap2.adu.org.za/docs/sabap1/186.pdf>).
- Birds Of Prey (<http://home.hccnet.nl/r.goedegebuur/roofvog/afrikaansehalsbandvalke.html>)



A pair at Serengeti National Park, Tanzania. Male on left and female (brown back) on the right.

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