Husbandry Guidelines for
Red Jungle Fowl
Gallus gallus
(Aves: Phasianidae)
Disclaimer:

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OCCUPATIONAL HEALTH AND SAFETY RISKS

The Red Junglefowl is considered a low risk species to physical danger. It remains a fairly small species of pheasant and is quite shy and therefore usually does not pose a threat. It can however increase to moderate risk during the breeding season, or during catchment/movement. An adult cock bird sports four to seven centimetre leg spurs; a sharp, bony appendage on the back hind leg. This is used mostly for combat between males for territory and mating privileges but is also used in self defence, or defending his hen and chicks. This could prove quite hazardous from a health and safety point of view as an adult Rooster in breeding is quick, persistent and accurate in flaring his hackles and attacking anyone (or anything) that may enter his territory (enclosure). Spurs can inflict extremely deep wounds usually around the legs but some cocks may get a bit of lift and deliver attacks to the chest or neck area.

Control methods could be the complete removal of spurs from a young age, usually with a hot object and pliers. A more common practice is simply trimming the spur tips to a blunt edge. Methods of health and safety to resist an attack by a Red Junglefowl cock could be entering the enclosure with a rake and knee high boots, or locking the cock in the aviary walkway.

Disease and hygiene is crucial with any species of Galliforme. A bird that spends a considerable amount of its day scratching in loose soil and moist ground is highly susceptible to disease and parasitical infection. Mites or bird lice are less common in Galliformes due to their excessive dust bathing, preening but is still very possible. Insecticide sprays should be administered every six weeks, and old bedding, browse, nest boxes and other places where mites could colonise should be removed, sprayed, sterilised or replaced. Red Junglefowl are particularly prone to worm infestation, tapeworm, roundworm, hookworm are all common but deadly parasites that could potentially be transmitted to humans. Coccidiosis is another protozoa disease that infects the intestines and can be extremely deadly as well as transmissible to other species. Health and safety risks could be cross contamination by soiled bedding, droppings, feathers and dust on keepers boots, rakes, containers etc. A regular prevention treatment regime should be put in place to avoid coccidiosis infection. This application should be done monthly with other regime checks and medication which is usually applied in the birds water. Parasitical worms can be treated by tablet or liquid worming suspension that is administered in the birds drinking water, worming is advisable every three months.

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1. Introduction

The Red Junglefowl (Gallus gallus) is a highly unique species of tropical Pheasant native to Indo-China, Hainan, Lesser Sunda Islands, Malaysia, Burma, extreme south of China, Siam, Ceylon and India. It is a highly significant species and is suspected to be the sole wild ancestor of the domestic chicken, making it one of the most significant species associated with humanity.

In its wild form this species is highly adaptable and can be found in a range of habitats such as damp, humid primeval forests, secondary growth, dry scrub and isolated woodland pockets. In captivity this species has a questionable population of purity, and attention is needed to exhibit and preserve this important pheasant species for generations to come.

The Red Junglefowl is one of four species including the Ceylon, Green and Grey Junglefowl. These birds are namely referred to as Junglefowl due to their common habit of inhabiting thick scrub; a unique trait among Pheasants. Red Junglefowl are believed to have started their reign of popularity as an important food source for people at least five-thousand years ago in South-eastern Asia where domestication begun. Soon this species was present to primitive tribes in Africa, South America and the Pacific Islands with the source of distribution still disputed. Feral birds of domestic varieties, intermediate forms and integrational subspecies popped up on many Islands and mainland groups which has threatened pure populations in many different parts of the Junglefowl’s original range.

In relation to this, captive populations of this species need to be constantly assessed, studbooks should be created and a general rise of education should be given to this important bird; which suffers from a lack of education and recognition as a significant species. Keepers and enthusiasts need to be enlightened on what traits recognise pure specimens of the Red Junglefowl, and the five subspecies identified. It would be nothing less than a failure to lose the purity of the original Red Junglefowl as a noble, important and unique species of Pheasant that has given rise to the humble chicken.

This manual has been devised to provide the reader with an insight into the Red Junglefowl and Gallus genus as a whole, an on look into the history, taxonomy, wild distribution, habits and descriptions of true traits when identifying this species from a large population of impurity which can be difficult information to access. This manual has constructed a guideline of captive husbandry for the Red Junglefowl as a non domestic species- and gives insight into managing this beautiful pheasant in zoos, wildlife parks, aviculture and other captive institutions.
- A Guide to Birds of Southeast Asia by Craig Robson
1.2. **IUCN Category**

This species is recognised as **Least Concern** by IUCN red list classification. The following justification is given:

This species has an extremely large range, and hence does not approach the thresholds for Vulnerable under the range size criterion (Extent of Occurrence <20,000 km² combined with a declining or fluctuating range size, habitat extent/quality, or population size and a small number of locations or severe fragmentation). Despite the fact that the population trend appears to be decreasing, the decline is not believed to be sufficiently rapid to approach the thresholds for Vulnerable under the population trend criterion (>30% decline over ten years or three generations). The population size has not been quantified, but it is not believed to approach the thresholds for Vulnerable under the population size criterion (<10,000 mature individuals with a continuing decline estimated to be >10% in ten years or three generations, or with a specified population structure). For these reasons the species is evaluated as Least Concern.

[http://www.iucnredlist.org/details/22679199/0](http://www.iucnredlist.org/details/22679199/0)

In spite of this it is often disputed whether the population for the Red Junglefowl is properly evaluated in its areas of purity.
2. Taxonomy
Biological term referring to the classification of organisms. The Red Junglefowl is one of four species of the genus *Gallus* alongside the Green Junglefowl (*Gallus varius*), the Ceylon Junglefowl (*Gallus lafayettii*) and the Grey Junglefowl (*Gallus sonneratii*). This genus is a specialised representative of the diverse family Phasianidae which includes pheasants, partridges, Old World quail and peafowl. *Gallus* stands alone with physical and behavioural traits unlike any other species of pheasant. Although they do share physical traits such as the compressed tail of *Lophura* pheasants and the pointed saddle-feathers of *Phasianus* pheasants they still remain isolated, and a strongly specialised genus.

- A Monograph of the Pheasants Four Volumes 1 and 11 by William Beebe 1962

2.1. Nomenclature

Class: Aves  
Order: Galliformes  
Family: Phasianidae  
Genus: *Gallus*  
Species: *gallus*

2.2. Subspecies
The Red Junglefowl has five recognised subspecies, six if you include all domestic fowl as *G.g domesticus*. These five subspecies are as follows:

**Cochin-Chinese Red junglefowl (*Gallus gallus gallus*)**  
**Cock:** A tall, sharply dented comb, two lappets, facial skin scarlet red with milky white earlobes. Crown and neck long, pointed red feathers with a burnt fringe and dark brown shafting, some variation of golden orange in the thicker hackle feathers. The upper back, greater wing-coverts, and tertiary flight feathers an iridescent, glossy green/blue. Upper wing coverts dark red extending over the middle back, lower back is maroon passing through to fiery orange which extends to the rump. Secondary flights rufous, primaries dark brown to black with a white tail base covert showing before extension to a long, glossy green tail which curves downward considerably. Iris red to orange; bill brown with the tip and lower mandible horn coloured and legs brown to blue-grey.
In wild birds the hackle are replaced by short, rounded black feathers after the summer moult from June to September/October in eclipse plumage. The comb reduces in size and colour severity, as well as the tail which is not as elongated. Even though adult plumage is obtained in the first year, young cock birds are not as bright and have overall shorter feathers, as well as short, blunt spurs.  
**Length:** 650-750mm  
**Wings:** 230-250mm  
**Tail:** 260-275mm  
**Culmen:** 15mm  
**Tarsus:**
75mm

**Hen:** Face and throat partly naked and pale red with blue infused, small, white earlobes; comb minor with a small fold or nodules, lappets not present, crown and nape rufous infused. Neck feathers long, brown with broad yellow borders; upper parts brown, finely vermiculated with black and white shafts. Breast reddish brown passing to tawny on the abdomen, thighs, sides and flanks similar to the back colouration. Iris brownish, orange and bill and legs similar to the cock bird, perhaps slimmer.

**Length:** 420-460mm **Wings:** 185-200mm **Tail:** 140-155mm **Culmen:** 19mm **Tarsus:** 60mm

**Distribution:** Eastern Siam (may overlap intermediate birds with *spadiceus*), Cambodia, Cochin China, Annam except the north, middle and lower Laos. Intermediate populations between *gallus* and *jabouillei* exist in Northern Annam, as well as between *jabouillei* and *spadiceus* in north-western Indo-China. The latter intermediate form is separated further south by the wide, central plain of Siam where this species is absent.

**Burmese Red Junglefowl (Gallus gallus spadiceus)**

**Cock:** Similar to *G.g. gallus* but overall show feathers shorter, ear coverts are considerably smaller and usually red, but are sometimes white with natural integration with other subspecies. Comb perhaps larger with deeper, sharper indents.

**Hen:** Also similar to the nominate with neck hackles considerably shorter and duller.

**Distribution:** Burma, South-western Yunnan, Northern Laos, throughout Siam except eastern parts, northern Sumatra, Malaya. Birds of the Western Tonkin region are intermediate between *spadiceus* and *jabouillei*.

**Indian Red Junglefowl (Gallus gallus murghi)**

**Cock:** Similar to *spadiceus* with lighter, more yellow neck hackles, with the longer feathers golden yellow with a broad, black distinguishing central stripe. Saddle feathers light orange, earlobes small and cleaner white.

**Female:** Similar again to *spadiceus* with an overall pale, fawn wash.

**Distribution:** North, north-eastern India; the lower ranges of the Himalayas from Southern Kashmir to Assam where some of the best examples of this subspecies can be found. Northern and Eastern Central Provinces, Bengal, south to the Godavari, Orissa, the Tributary mahals, Gamjam, Vizagapatam and part of the Godavari district, Joongurk, Kareall, Nowagurk, Jeypore and other Feudatory State (after Whistler). Interestingly this species naturally hybridises with *G. sonnerati* in the central Provinces where there distribution overlaps. Both pure and hybrid birds of both species have been recorded near Jubhulpore.

**Javan Red Junglefowl (Gallus gallus bankiva)**

**Cock:** Similar to *spadiceus* but easily separated by broad neck hackles which are rounded at the tips, unmistakable to any other subspecies.

**Hen:** Also has rounder, broader neck feathers.

**Distribution:** The southern half of Sumatra, Java and Bali.
**Tonkinese Red Junglefowl (Gallus gallus jabouillei)**

**Cock:** Similar to *gallus* but all red plumage is darkened considerably, all ornamental feather feathers short and don’t have a sharp point. Lower flank hackles are small, darker; tail is short and a bit more compressed; little to no orange on the neck and comb smaller, more streamline, lappets small, not low hung. Ear lobes small and usually red.

**Hen:** Neck feathers have a thicker, deeper yellow border than gallus and overall darker plumage.

**Distribution:** Tonkin, highest points of north Annam, extreme south-east of Yunnan, Hainan, intergrading with *spadiceus* in north-west Tonkin.

Pheasants of the World Volume 11 by Jean Delacour 1977
A Monograph of the Pheasants Four Volumes 1 and 11 by William Beebe 1962
2.3. Recent Synonyms
Being the suspected common ancestor of all domestic fowl, the Red Junglefowl goes under many different classifications depending on the individual or means of classification. The major confusion lies between the definitive difference between domestic fowl and the Red Junglefowl in its pure form. Within captivity; including, aviculture, poultry keeping and within zoos individuals of this species diluted with domestic blood are obviously physically different to their wild counter parts, although natural colouration is retained which seems to be enough to label these ‘Junglefowl’ looking domestic fowl as pure Red Junglefowl. This terminology has been detrimental to captive populations in some parts of the world as once a pure genotype is lost, it can’t be reverted. Diluted blood lines of intermediate birds of pure Junglefowl genes, contaminated with ‘Junglefowl’ domestic birds with physical Junglefowl traits are almost impossible to identify especially in hens, and this doesn’t include the intermediate forms of four subspecies often seen in captivity. Consequently any bird with lineage to the traits of Red Junglefowl, usually including colour and size are called as such. Areas where ‘feral chickens’ occur such as Kauai Island in Hawaii are often referred to as Junglefowl even though they are clearly descendants of a mix of both domestic fowl and possibly pure Red Junglefowl introduced long before; the modern day result is still a domestic fowl with traits of a Junglefowl that has reformed some natural features such as improved flight, leaner build due to diet, lifestyle etc. These birds should
correctly be named Feral Fowl/Feral Chicken/Domestic Junglefowl etc. to avoid confusion. Contaminated birds in some of the natural range of the Red Junglefowl are becoming increasingly common with crossing occurring on village outskirts where domestic birds roam free, meeting and reproducing with Red Junglefowl on forest outskirts. Areas where these diluted populations occur should be documented and removed from the distribution charts of Red Junglefowl to avoid genetic extinction or further integrations into adjoining area populations.

2.4. Other Common Names
Because of the wide range of common names used to describe domestic forms of Gallus gallus included is only those used to describe Red Junglefowl in their pure form as a non-domestic species, these are:
Junglefowl, Wildfowl, Wild Junglefowl, Wild Chicken, Native Chicken, Burmese Fowl, Indian Fowl, Scrub chickens, Bamboo Fowl.
Latin- Gallus
English- Red or Wildfowl
German- Kaminhuhn, Bankivanhun, Wildhuhn French- Coq Bankiva
Northern India- Jungli murgh (male) Jungli moorghi (hen)
Bengali, Lower India, Assam- Kukar, Kukra, Bun kookkoor, Bunkokra Burma- Tanghet or Tanquet

3. Natural History
“Of all the pheasants, indeed of all birds in the world, the Red Junglefowl stands first in importance to mankind on earth”- William Beebe.
To the opening quote the Red Junglefowl has become one of mankind’s most important animals as a food source for both meat and eggs, the domestic fowl is now the most numerous bird on earth. Red Junglefowl were believed to be first domesticated in Southeastern Asia around the Indus Valley long before historic times; estimated at least five thousand years ago; with evidence they were present in China before 1400 b.c.
Primitive tribes in Africa, South America and the Pacific Islands had these chickens not long after, and it is still a mystery as to how many parts of the world obtained this Asian species. A 2008 study held by BMC Evolutionary Biology addressed the gap left by the
exclusion of the Indian Red Junglefowl (G.g murghi) in the history of domestication. Molecular and DNA research has revealed that the Red Junglefowl was most likely domesticated in more than one area of its natural range, including India. Their research also concluded that even though earlier studies have shown the nominate G.g gallus was most likely the wild ancestor of all domestic poultry, integration of the other subspecies did take place and contribute to domestication in many areas. There is also another theory that early hybridisation with the Grey Junglefowl has brought about many of the modern day domestic colour varieties and mutations.

With the many similarities domestic breeds share with wild Red Junglefowl its probably viable to conclude they are the sole ancestor of the domestic fowl, this is evidentially shown with many domestic breeds and traditional breeds such as the red and brown gamefowl sharing many physical traits such as the means of natural Red Junglefowl plumage. One distinguishing factor between modern day chickens and the Red Junglefowl is the absence of eclipse plumage confirmed in wild birds but absent in poultry. Many captive specimens of Red Junglefowl that certainly appear true to type lack eclipse plumage completely, which most defiantly concludes diluted genes with domestic birds at some stage. Although some traditional breeds of fowl, notably the Oxford Fowl reportedly go through a partial-eclipse and small, black, rounded feathers appear in- between moults of the breeding plumage.

Regardless of its huge importance to human life, the Red Junglefowl or collectively all four species of Junglefowl are highly specialised pheasants unlike any other. Although the combs and lappets are common to our eyes from domestic poultry, when put in perspective to other pheasant species the fleshy appendages flushed with colour are highly unique. The Red Junglefowl is particularly unique again being highly gregarious, travelling in large parties of a dominant cock, sub-adult cock and a harem of anywhere between four to eight hens; which is a larger flock than any of the other three Junglefowl species. Another interesting factor of pure wild Junglefowl is their ability to increase in size, and overall vigour on a captive diet which can’t come as a surprise with many giant breeds of domestic fowl existing today. In its wild state the Red Junglefowl can be anywhere from rare, secretive and elusive in thick jungles and bamboo forests to common in some suburban gardens, agricultural areas where feed is available year round. The wild habits of this species are poorly documented, and due to increasing development in their native home some birds face genetic extinction with the contamination of village chickens in many areas. The importance of viable captive populations of this species is crucial considering many countries have already lost viable, uncontaminated genetics even within breeding programs. If we can’t conserve what truly makes this beautiful species of pheasant something other than a breed of poultry, then there is little hope of preserving true-to-type wild populations in their native state. As the living ancestor of all domestic fowl it would be a utility point to hold interest, document and preserve this species as we will come to a point of comparison between feral, domestic and native birds; when there is still so much to learn.


Pheasants of the World Volume 11 by Jean Delacour 1977
A Monograph of the Pheasants Four Volumes 1 and 11 by William Beebe 1962
3.1. **Morphometrics**

3.1.1. **Mass And Basic Body Measurements**

**Cock**
- Length: 650-750mm
- Wings: 230-250mm
- Tail: 260-275mm
- Culmen: 15mm
- Tarsus: 75mm
- Weight: 673-1455 grams

**Hen**
- Length: 420-460mm
- Wings: 185-200mm
- Tail: 140-155mm
- Culmen: 19mm
- Tarsus: 60mm
- Weight: 485-1050 grams
3.1.2. Sexual Dimorphism
This species is sexually dimorphic and sexes can easily be identified by plumage differences. See 2.2 Subspecies for detailed description of each sex in each subspecies. Typical to pheasants, obvious sexual dimorphism is present in this species with the cock sporting colourful, showy plumage, hackles, long saddle feathers, a comb, lappets, overall larger body mass, leg spurs and a curved, glossy tail. While the hen is of rather drab appearance, with little to no comb or lappets, slimmer neck and head, a shorter black to brown tail and overall earthy coloured plumage. This is a typical trait in this group of birds as the hen relies on camouflage and speed to escape danger while she incubates and rears the chicks on her own, while the cock bird only needs to worry about himself and occasionally his harem of hens.

- A Guide To Pheasants & Waterfowl, their Husbandry, Care & Management by Dr. Danny Brown

3.1.3. Distinguishing Features
The Red Junglefowl is quite easily identifiable and is hardly in an overlapping position where another species could be confused or misidentified. Of the four species of Junglefowl, the Sonnerati Junglefowl (Gallus lafayettei) is visually the most similar species to Gallus gallus. Cock birds of lafayettei have a smaller, differently shaped comb infused with an orangey-yellow. Adult males have a glossy, iridescent tail like Gallus g. although it appears more purple than green. Females of both species can be harder to distinguish, lafayettei hens have a lightly slimmer build with an overall smaller body size and scaly underparts. The most difficult aspect of separating the Red Junglefowl is from traits crossed though its domestic relative. There is a broad spectrum of domestic poultry breeds, which when compared to a Red Junglefowl; is obviously different in vigour, build, average body mass, colouration and habits. A major issue and probably the most important differentiation is knowing what to look for in a pure Red Junglefowl when selecting captive stock, or identifying wild populations. Unfortunately the term 'Junglefowl' in recent years has been labelled as a rare ‘breed’ of poultry, and is treated as such; instead of a species of pheasant. Red Junglefowl are usually identified in the poultry hobby as any fowl with smaller size, white ears and wild type colouring. Some show standards that include this species namely refer to many true-to-type traits of the Red Junglefowl as a fault, red ear lappets for example. Most birds of these lines have no consideration or identity to subspecies whatsoever which shows the lack of knowledge by some enthusiasts to treat Red Junglefowl as a pheasant species, not a breed of chicken. Identifying these birds, which are simply Gallus gallus domesticus with Junglefowl characteristics is fairly easy. These birds are still far more robust than their lean wild counterpart. Cocks can still be quite hard to distinguish, contamination is fairly obvious in a lack of eclipse plumage during the breeding moult. Lookalike Jungle cocks also have a larger comb, rich coloured facial skin, larger lappets, thicker legs that are too long/
short; a thicker neck, coarser head with a thicker bill than wild type birds. Hens are much easier to identify, almost all contaminated Junglefowl hens have a prominent comb which is very much a trait of domestic birds, wild hens have no comb or little nodules depending on the subspecies. Pure Jungle hens are also considerably smaller than the cock, streamline in shape, with a neat, thinner neck and head and a more horizontal posture than the typical ‘domestic fowl’; upright position with tail held higher than the body. Pure hens carry their tail more horizontally to their body, only rising it when alerted. Aside from all these factors, obviously any sign of a colour mutation is a giveaway for contaminated stock for example white flight/saddle feathers. Subspecies are occasionally classified into the same account of lookalike domestic birds with Junglefowl characteristics similar to wild subspecies; for example labelling a cock *Gallus gallus* *murghi* for having a white ear lobe, smaller comb. This can be as detrimental as poultry standard ‘Junglefowl’ and means of education of this species is the only cure to removing these birds from breeding programs, or at least the false label of pure *Gallus gallus*.


- Pheasants of the World Volume 11 by Jean Delacour 1977
- A Monograph of the Pheasants Four Volumes 1 and 11 by William Beebe 1962
- A Guide To Pheasants & Waterfowl, their Husbandry, Care & Management by Dr. Danny Brown
3.2. Distribution and Habitat

The Red Junglefowl’s natural distribution stretches across the tropics of Asia: Indo-China, Hainan, Lesser Sunda Islands, Malaysia (absent from Borneo), Burma, extreme south of China, Siam, Ceylon, India. They have also been introduced to many islands and parts of the Pacific including several Hawaiian Islands, notably Kauai all of which are *G. g domesticus* historically Red Junglefowl which were thought to have been introduced as wild birds and have become lost crossing over with free range domestic fowl. They have also been introduced to Christmas Island, The Great and Little Coco Islands, Mariana Islands, Tonga, Tahiti, Viti, New Caledonia. There are numerous other island populations that are all certainly domestic crossed birds, reverted back to wild behaviour and therefore won’t be covered here.

The Red Junglefowl is found in low to moderate altitudes in a variety of habitats. They are a highly adaptable species as seen in the amount of out of range introductions; and can be found six thousand feet from sea level. They prefer wet, damp and humid primeval forests, secondary growth forests, dry scrub and isolated woodland pockets neighbouring villages and cultivation. This species has a fondness for Bamboo groves and is sometimes referred to as the Bamboo Fowl, Bamboo is perfect for cover on foot or by flight, a perch.
or roosting spot on a horizontal Bamboo stalk is quite safe for night or day time roosting. In the eastern parts of their range habitats avoided are usually heavy tropical forest without the cover of Bamboo, Acacia clumps etc. Junglefowl thrive with cover which is crucial to the rearing of chicks and the evasion of predators when foraging. Like most pheasants they are wary, alert and always have an eye on what’s going on in their environment, even with constant exposure to human activity they remain shy. Notably birds of India G.g murghi somewhat rely on human cultivation and are more often than not found feeding in or near crops, village roads and rely less on larger areas of thick scrub for cover; instead frequenting small groves and pagodas. This notably could be referenced to the incline of Indian Red Junglefowl to be less flighty, and overall easier to manage in captivity. It’s fair to say the Red Junglefowl is highly adaptable, hardy and has an amazingly even distribution with intelligence to its adaptability and evasive survival skills. A unique feature of this species are their habit of morning and evening foraging in open areas and clearings, a trait that has been maximised in domestic birds. Red Junglefowl are highly sociable, another maximised trait in domestic birds unlike many species of pheasant. Outside the breeding season they can be found in large flocks, to small parties to single pairs; a lone bird puts itself at risk of persecution.

- Pheasants of the World Volume 11 by Jean Delacour 1977
- A Monograph of the Pheasants Four Volumes 1 and 11 by William Beebe 1962
- A Guide to Birds of Southeast Asia by Craig Robson
3.3. Conservation Status

IUCN status for this species is Least Concern. This classification is continually debated to the genetic purity of the native wild populations included in this classification. Systematics don’t always investigate the genetic integrity of every wild population included in the consensus. Habitat destruction in many parts of Asia are a continuing battle for many species of birds, including the Red Junglefowl. As previously mentioned, their biggest threat is genetic extinction which is extremely complex to the different distributed populations and subspecies. Urban cultivation brings about village chickens as an important food source, which have readily contaminated the gene pools of Red Junglefowl in many areas. These populations should ideally be identified, and maintained to ensure the viability of this species. Interestingly some subspecies are more inclined to cross over domestic fowls than others; Indian Red Junglefowl have adapted to cultivated areas more so yet seem to prefer to keep to their own specialised habits and flocks rather than amalgamate and breed with their domestic cousins.

3.4. Longevity

3.4.1. In the Wild

Average: 8-12 years

3.4.2. In Captivity

Average: 13-19 years Maximum: 30 years

3.4.3. Techniques Used to Determine Age in Adults

Determining the age of adult birds can be relatively easy in cocks, and a little more challenging in hens. Red Junglefowl cocks have a spur, a bony spike midway up the back of the leg used for fighting between males/general defence. At six months of age this spur is blunt and no more than a centimetre long, and a two year old cock bird usually has no more than a two point five centimetre spur; this grows and becomes sharper as the cock ages. Another unreliable method of telling the age of a mature cock is the skin of the comb, lappets and any bare facial skin which is considerably rougher, a more wrinkled appearance in birds older than two to three years. The most common method applied for domestic fowl is scaling around the feet, which ‘shed’ every year, developing rough skin patches in-between an older birds foot scaling, this method can be used in both sexes.
4. Housing Requirements

4.1. Exhibit/Enclosure Design
Considering this species is the concluded wild relative of all domestic fowl, Red Junglefowl can realistically be housed by the same means as most poultry. Although this is practiced; and genetically diluted populations of Junglefowl maybe more confiding, tame and tolerant by the housing means of coops, runs and battery cages; true-to-type Jungles are very shy, flighty birds like most pheasants. With this in mind, it comes down to what housing requirements the birds will tolerate and what housing the birds will appreciate and flourish in. It’s my personal thought that there is hardly a reason to source, and own pure Junglefowl unless you house them appropriately, preferably in a planted aviary or shade cloth pen. Housing them otherwise in coops or suspended cages loses the true beauty of maintaining and breeding Junglefowl as a wild species under natural conditions, and observing the semi wild behaviour brought about by natural conditions. Therefore it’s conclusive that display birds be housed in an appropriate planted exhibit which best mimics their jungle home. Asian themed aviaries or mixed species exhibits where the birds can free range is where they will look best. Exhibits that solely house Red Junglefowl do not necessarily have to be high, two meters in height is adequate. Floor space is probably the most important consideration for this species, open areas to forage with a retreat of thick shrubs, a quiet, sheltered corner for nesting, and a roosting point are the basic exhibit design points along with shelter and an overall safe structural design. This species is also a perfect candidate for free ranging, unlike domestic fowl Junglefowl are fast, lean, alert and can fly exceptionally well. Free range birds will roost in trees with little issue but individuals will almost certainly be lost to predators in time. Junglefowl can be conditioned to an off exhibit ‘coop’ or cage like structure that they can be secured in for roosting and released of a morning.
- A Guide To Pheasants & Waterfowl, their Husbandry, Care & Management by Dr. Danny Brown

4.2. Holding Area Design
Red Junglefowl can be held in most off exhibit holding aviary designs including conventional, suspended and cantilevered with little issue as long as there is a point of retreat and some form of cover such as a browse covered corner. In-exhibit holding areas could include a small suspended cage located in the exhibit walkway or air lock, perhaps divided to house cocks separately from the hens to avoid stress related aggression when moving birds or maintaining their exhibit.

4.3. Spatial Requirements
Junglefowl fall under the same regulatory enclosure size for domestic fowl, which in battery conditions can be as small as 40cm high by 21cm wide and 29.7cm long for one
bird. To fairly house this species a floor area of at least 3 meters long, 3 meters wide and 2 meters high would happily house a cock and a harem of 4 hens. However enclosure design, and spatial requirements vary globally for this species depending on the environment and situation in which the birds need to be housed.

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### 4.4. Position of Enclosures

Red Junglefowl are a tropical species and prefer warm, temperate environments thriving in warmer parts of the globe. An aviary or enclosure design for this species is best situated in a sheltered position that receives maximum sunlight. Like most pheasants Junglefowl are still prone to heat stress and it’s important there is some form of natural shade, whether this is achieved by scaling the enclosure with broad leafed plants such as palms or by a layer shade cloth running along the roof, the birds should not be exposed to the direct elements. The aviary should be positioned away from direct wind.


### 4.5. Weather Protection

If this species is to be housed in an aviary it should be 3/4 - too fully roofed; fully covered back and 3/4 panelled sides of a weather proof material such as corrugated iron.


### 4.6. Temperature Requirements

As previously mentioned this is a tropical species by nature and prefers warmer climates although it does inhabit some very cold climates in parts of its range. Overall the Red Junglefowl is highly adaptive and will adapt to most climates except for extreme cold year round.

4.7. Substrate

Red Junglefowl are foragers by nature making substrate an important natural resource for the birds in captivity. In the wild this species is one of few pheasants to be recorded foraging in open areas bordering forests, and most of their day time activity is spent turning over leaf litter and loose soil looking for invertebrate matter and seeds. In captivity the best substrate would be leaf litter, and captive populations will appreciate any available source of this. In comparison to a concrete or wire floor, any substrate will be appreciated by Junglefowl. Soft soil, river sand, mulch or a combination of both with a loose layer of leaf litter is probably the most suitable option.


4.8. Nestboxes and/or Bedding Material

When it comes to nesting sites Junglefowl will happily use a wide array of nest boxes as well as go without. Metal drums, or paint tins on their side with an entry cut in is an easy and reliable source of nest box hens will happily use. Wooden boxes can also be used but aren’t necessary besides for aesthetics. Commercial poultry nest boxes are another great option for this species and are probably the best option for Red Junglefowl. Nesting material can be provided but considering the hens nest is usually a shallow depression on the ground lined with few twigs it isn’t necessary. If provided Jungle hens will use a fine hay such as Timothy to line their nest.


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4.9. Enclosure Furnishings

Red Junglefowl show their appreciation for a well planted aviary, it’s quite easy to note that a clump of grass clippings, mulch or soil creates excitement within the group with soft clucks of curiosity and investigation following instantly. Vines, low shrubs, bamboo will be used to a vantage point and once shy birds are instantly more content, using every inch of their enclosure to show off natural behaviours. This is all well and good until the birds are done with their substrate and start digging at the roots of the beautiful palms and grasses you just planted! Jungle fowl are extremely destructive much like domestic fowl and only the hardiest of plants will endure their constant digging and picking. Hardy vines, some species of palm and grass such as Lomandra sp. may survive if the enclosure is large enough to spread out the destruction between the colony. Lantana species are also a good choice for a hardy aviary plant. When considering a natural looking planted exhibit for Junglefowl mossy logs and rocks coupled with leaf litter and one or two ‘indestructive’ plants that work for the keeper such as Bamboo and a Lomandra shrub is enough to keep the aviary visually pleasing while stimulating for the birds.

5. General Husbandry

5.1. Hygiene and Cleaning
Junglefowl like most fowl, are messy birds by nature and can create an unhygienic environment for themselves in little to no time. Depending on the enclosure size if not free range, aviaries should be raked and spot cleaned daily. Roosting areas in particular are usually spoiled by droppings and dust from overnight preening. This is defiantly a hygiene problem area and many parasites and viruses can be distributed by dust as well as bacteria infections from faeces. F10 or Avicare by Vetafarm are both veterinary grade disinfectants that can wet down dust and make for easy removal by Chux cloth or towel. Droppings can be easily removed by a scraper, and the area should be disinfected and wiped dry to avoid a build up of moisture. Hay or other substrates can be placed under roosting areas to collect a build up of waste and make removal easier. Depending on the substrate it should be partially changed monthly, with a complete substrate turnover every 3 months. If hay or other bedding is offered it should ideally be changed daily as birds will walk faeces and dirt through it if they aren't directly soiling it.


5.2. Record Keeping
Records of this species should ideally be maintained monthly. True Red Junglefowl remain shy and prefer reservation, and if housed correctly are extremely hardy birds, with a much better immune system than domestic fowl. Monthly records kept as a minimum are recommended as these are ground dwelling birds and parasite susceptibility is high. Worming is recommended every three months and should be recorded, and done accordingly. Red Junglefowl, like chickens are prone to Coccidiosis a disease caused by protozoa in the intestine. This should be treated monthly with liquid application to the birds water.
Behavioural issues such as aggression is common, Cocks are usually endearing, and look after their harem of hens although in a captive situation one hen may feel the pressure and be prosecuted by a frustrated male. Breeding can occur out of season, and therefore monthly checks and observations should be made at least monthly.

5.3. *Methods of Identification*

Leg banding is a simple, and widely used means of identification for this species not only in captive animal facilities but in poultry and many other commonly kept Galliformes. Coil wire bands with rubber coating, split or closed steel or just plastic leg bands can be used. Steel closed rings can be slipped over all four toes in a young bird at four to five weeks of age, although plastic coil bands are the most popular universally as they can be applied trauma free at any age with minimal problems.


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5.4. *Routine Data Collection*

There is a lot of data collection involved with this species, like most birds. Considering little is known about wild Red Junglefowl’s breeding habits this seems to be the most obvious account of study. Seasonal laying, breeding out of season and the means of courtship displays in a single hen or harem is important collection data. Eggs are laid consecutively within season, or randomly out of season. The growth increase in young Red Junglefowl is a worth while study, with cross comparison to each subspecies.

6. Feeding Requirements

6.1. Diet in the Wild

In the wild Red Junglefowl are best described as omnivorous. Like most pheasant species larval insects and their eggs such as white-ants and termites are relished and makeup most of the invertebrate matter consumed; the rest is derived from foraging through loose soil and leaf litter. Besides the opportunistic insects, plant matter makes up an estimated 80% of wild Red Junglefowl's diet. According to William Beebe in his Monograph of Pheasants, wild Red Junglefowl inhabiting isolated areas that had been dissected for research showed seeds, pods and small nuts of unknown plants made up a considerable proportion of the daily diet, accompanied by leaves, petals, bamboo shoots, small fruits and sprouted seeds. It's probably conclusive that this generally makes up the traditional wild diet of Red Junglefowl. Birds which are found closer to the outskirts of villages and crops take advantage of a higher carbohydrate diet of ripening seeds like millet and rice which is notable in larger ‘bulker’ looking individuals. Another notable wild dietary supplement is the inclusion of ‘gizzard stones’ which are selectively chosen pebbles and other mineral stones which aid in digestion. According to W. Beebe a wild Red Jungle hen was found to have seventeen sapphire stones in her gizzard. Feeding habits of wild Red Junglefowl is flock foraging usually only visible in the morning and evenings, flocks venture into deeper, cooler undergrowth during the heat of the day out of sight unless flushed.

- Pheasants of the World Volume 11 by Jean Delacour 1977
- A Monograph of the Pheasants Four Volumes 1 and 11 by William Beebe 1962

6.2. Captive Diet

In captivity the Red Junglefowl is quite easy to cater for and can generally be managed on the same diet as domestic poultry. Although this species does deserve a little more intricate thought into its captive diet, especially in relation to breeding and the maintenance of pure strains of subspecies. Red Junglefowl can easily be managed on a maintenance diet of poultry layer crumbles/poultry mash with 14-16% protein. Crumbles/mash should make up 50% of the maintenance diet, with a 20% inclusion of a ‘finch’ or ‘budgie’ seed mix made up of/including Japanese, White French millet, Red Panicum, Oats, Canary seed; with the other 15% a quality ‘scratch mix’ made up of/including Wheat, Sorghum, Oats, Mung beans, Black Sunflower. The remaining 15% of the diet should be made up of greens, and other vegetable matter. During the breeding season a higher source of protein would be advisable and poultry crumbles/mash should make up 70% of the diet, 10% should be made up of equal parts of ‘finch’, ‘budgie’ and ‘scratch’ mix while the remaining 20% should be made up of high protein supplements; the most
favourable being livefood.
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Red Junglefowl pair foraging in leaf litter - Photo by Zac Mackenzie

From personal experience the following vegetable/plant matters are accepted by Red Junglefowl:

**Commercially available:**
- Silverbeet
- Cos/Ice-berg lettuce (in controlled amounts)
- Bok Choy/Choy Sum
- Chinese Broccoli including flower
- Spinach (English Spinach in controlled amounts)

**Other commercially available supplementary plant items:**
- Cranberries (fresh or dried)
- Currants/ Sultanas
- Bamboo shoots (canned is accepted)
- Alfalfa sprouts
- Bean Sprouts
- Fresh corn off the cob
- Peas (frozen pea and corn mixes acceptable)
- Grapes (in controlled amounts)
- Pomegranate seeds
- Finely diced apple/pear
- dried banana, papaya crushed
- Cooked brown rice (in controlled amounts)
- Lentils

**Seasonal plants:**
- Thistle/Dandelions (*Taraxacum officinale*)
- Chickweed (*Stellaria media*)
- Grass seeds (various millet)

**Protein Dietary options:**
- Mealworms (in controlled amounts, larval insect high in protein, high in fat)
- Crickets (excellent source of roughage, lower in fat than mealworms, great enrichment when fed live)
- Earthworms
- Earwigs (wet rolled up newspaper placed under log or rock for 2 week period will
attract earwigs and similar livefood
- Whiteants/termites (when seasonally available)

- Softfood

an easy protein supplement available all year round, a commercial mix of Vetafarm’s ‘Superior Egg & Biscuit Mix’ wetted down to a crumbly consistency, additives such as grated cheese, fly pupae, crushed cat biscuits/insectivore mix is a simple, nutritious mix which is notably useful during the breeding season. Fresh egg is preferable and can be used at any time. Note- Any leftover softfood offered should be removed to avoid spoiling.

*This is simply a guide, many other food items can be used depending on location, seasonal and cost variances.*

Shell Grit should be on offer in a separate bowl, monitored for soiling year round. A good grit mixture consists of/can be made up of the following:
- Canundra grit  
- Oyster grit  
- Limestone  
- Boiled, sterilised egg shells  
- Crushed Cuttlebone  
- Commercial Iodine/calcium block crushed  
- Charcoal  

*Note* - Commercial supplementary blocks available for poultry can be a useful addition *but loose shell grit should still be offered*

- A Guide To Pheasants & Waterfowl, their Husbandry, Care & Management by Dr. Danny Brown  
6.3. **Supplements**

Many useful commercial supplements can be used as a maintenance supplement or breeding additive. From personal experience the following products can be a useful dietary supplement to Junglefowl:

- **Vetafarm Soluvite D**
  12 essential vitamins and minerals including vitamin D, this supplement is soluble in water and makes a great ‘general diet supplement’ year round, especially for birds housed indoors for extended periods which can be useful for young poults housed indoors, perhaps lacking access to extended sunlight.

- **Vetafarm Multivet**
  Multivet combines vitamins, minerals and notably amino acids which can aid during moulting, but also makes a useful dietary maintenance supplement for year round use when required.
- **Vetafarm Calcivet**
  Calcium and Vitamin D3 liquid which is water soluble but can also be added to softfood or administered straight to the birds mouth. This supplement can be used whenever a calcium boost is needed but is particularly useful leading up to and during the breeding season to ensure calcium intake especially in producing hens.

- **Vetafarm D Nutrical**
  ‘Super Calcium’ supplement plus vitamins and minerals this product is a powder that can be added to softfood, livefood, vegetable mixes but cannot be dissolved in water. This supplement is useful year round as a calcium and general health booster but is notably useful during the breeding season.
6.4. Presentation of Food

Red Junglefowl enjoy an enriching lifestyle of foraging for their food. When provided dry food mixes from an open bowl, hopper, or gravity feeder they often dig out the whole quantity of food into the enclosure substrate and pick through, using thorough scrapes and scratches for their preferred items. The cock bird will guide his hens with excited and enticing clucks to any exciting morsels. Food containers best suited include seed hoppers, preferably mounted with a grate to stop excessive ‘scratching out’ of all dry food contained. Other containers commercially designed for poultry are probably the best suited ‘hooded’ feeders only allow room for the birds head to enter and feed, restricting ‘scratching out.’ These feeders can be mounted to a secure, sheltered part of the enclosure or raised from the roof using chain (particularly useful for vermin control). It is important to note that commercial poultry pellets or crumble is extremely intolerant to moisture and can spoil causing serious health problems if left over time. Open bowls are a great method for providing dry food if the daily intake of food is split over two feeds, reducing the amount fed out and stopping excessive scratching. For enrichment, ‘scatter feeding’ of livefood or specialist feed items such as cranberries, shoots, sultanas will give the birds countless hours of foraging, increasing their visibility in the enclosure throughout the day and most importantly showcasing natural, foraging behaviours as a flock. Other enrichment ideas include scattering favoured food through a large drum or bin of mulch/leaf litter or hiding mealworms in a soft, rotting log the birds can access. In conclusion this species is a biologically designed forager, and will happily spend extended time turning over leaf litter, or mulch which when provided in a thick layer; in my experience is the best enrichment.


- A Guide To Pheasants & Waterfowl, their Husbandry, Care & Management by Dr. Danny Brown

Feeding trough with poultry grate

Seed Hopper

Poultry feeder hanging by chain
7. Handling and Transport

7.1. Timing of Capture and Handling
When catching Red Junglefowl for movement it is probably best to capture birds in the morning, between 6-9am depending on time localities and daylight savings. This time offers a cooler climate and reduces stress levels. It also aids in having the rest of the day to relocate/travel birds between destinations.

7.2. Catching Bags
A catching net used for Junglefowl should have a large frame, at least 45cm in diameter to cater for the delicate areas of the bird such as the tail, comb. Cotton or linen material is best suited and nylon nets may damage bare skin areas of the Jungles wattle, padding should also be included around the net frame.
7.3. Capture and Restraint Techniques

The Red Junglefowl can be difficult to both capture and restrain, and can cause injury to itself and the keeper involved if careful action is not taken. Junglefowl are a naturally shy species in their pure form, and can easily be ‘wound up’ much like other pheasants once a small amount of disruption is shown birds can continue in an uproar caused by nervous behaviour, injuring themselves or other animals on exhibit. For this reason it is crucial to have a capture plan, making the capture fast and swift, restraining the bird and placing it into its transport carrier stress free. Red Junglefowl cocks are fast, accurate and will injure the keeper if not aware. Sight the bird(s) targeted for capture, enter the enclosure giving the birds space for retreat if necessary. Move slowly towards the back of the enclosure, spacing your arms as a barrier to help contain the birds, a second person could be useful in doing this. Using swift movement it’s best to cover over the top of the target bird while on the floor to prevent upward flight and potential scalping damage. Once the bird is immobilised in the net, depending on the sex of the bird it can be restrained by simply placing two hands into the net, gently grasping the wing coverts while supporting the breast with the opposite hand or grasping both legs above the ankles and supporting the breast in hen birds. Adult cock birds that have a leg spur present can easily cause serious cuts to the keeper; especially while flustered and stressed in a net. By loosely placing the net on the ground while firmly holding the net rim down, sight the birds position and quickly, but gently restrain holding the wing.
coverts/breast while slipping the opposite hand through the net to restrain the legs above the spur. Once gently removed from the net birds of both sexes can be handled and restrained safely by holding both legs against your chest with one arm, while supporting the breast and hugging the bird to your chest for added support with the other.

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7.4. **Weighing and Examination**

For restraint see **7.3 Capture and Restraint** birds can be weighed by placing an individual in a cardboard box and placed on scales with the cardboard weight deducted prior. From a general restraint all physical health checks can be carried out reliably with a second person.


7.5. **Release**

Releasing the Red Junglefowl back into its existing or new enclosure is relatively simple. A wooden transport door, or poultry carrier fitted with a large access door can be placed open, on its side in a firm position. The box or carrier should be placed in an open area of the exhibit as Junglefowl lower themselves and run quickly and swiftly when agitated.


7.6. **Transport Requirements**

IATA standards for general standards for transporting birds as a whole can be found by this link


7.6.1. **Box Design**

Red Junglefowl are quite versatile in the means of transport and can be housed temporarily in a ‘PetPak’ or pet carrier with padded interior to prevent scalping. For longer journeys such as freight, a wooden transport box with interior padding and an entrance hole large enough for both a hand to enter and the bird to easily be removed/be able to exit on its own is advisable.

The following diagrams show suitable short and long term transport for the Red Junglefowl:
Internal padding is important to avoid scalping

Sliding entrance/exit hole with screws to fasten

Meshed Ventilation/Viewing Windows

7.6.2. Furnishings

Junglefowl are large birds and furnishings will most likely work against the birds rather than providing any benefit and a sole substrate is the only furnishing required for transport. Substrate however is important, Junglefowl produce a large amount of waist which becomes sloppy when stressed resulting in the quick fouling of their environment. Shredded paper, Oaten hay, Straw, Coconut peat or cat litter are the best options and a comfortable layer should be laid out on the floor of the box/carrier.

7.6.3. **Water and Food**

Food and water is not necessary for most instances of transporting Junglefowl. An item of greenery would be the best option to provide sustenance and moisture such as a few Bok Choy leaves or some lettuce which is probably best placed on the floor of the transport box. Furnishings in the way of food bowls will easily be knocked over by the birds providing a hazard during travel and an even worse hygienic environment of damp hay/bedding and spoiled food. If fixed, containers should be raised and water should be provided, along with greens again for sustenance.


7.6.4. **Animals per Box**

The example transport box in 7.6.1 can comfortably hold up to four adult Red Junglefowl. Care must be taken when housing cock birds under stress, and signs of aggression to other birds housed should be taken. Immature birds and hens with their existing cock bird can usually be reliably housed together temporarily.

8. Health Requirements

8.1. Daily Health Checks
A distant observation of the physical health of Junglefowl should firstly consider the
general demeanour of the bird, it’s important to know what natural flock behaviour is.
When a distant examination is done, it’s important to consider the usual behaviour of the
bird/flock in reference to the time of day. Jungle fowl are most active foraging in the
mornings and evenings perhaps around the same time as routine checks. Typical key
behaviour of jungle fowl includes group foraging, dust bathing, sun bathing (with wings
and legs spread out), feeding, minor banter (chasing, flying to roost, mock feeding/
mating), courtship, feeding behaviour, crowing, digging. Distant physical health checks
should include eyes clear of discharge, with orbital ring clear of swelling. Nostrils/oral
beak area should also be free of discharge/mucous it’s important to know from a distant
examination that the presence of dirt/feed stuck to the gape of the mouth or around the
nostrils could indicate an excess of discharge/mucous. Body position and posture is
probably the most important distant exam that can be made for pheasant species. Jungle
fowl should always appear alert by nature, head upright with quick movements of the
neck indicating the birds familiarity with its environment. Stature should be fully upright
unless laying down, legs should be extended not ‘squatting’ and tail should be positioned
according to situation. An alert bird will usually have its tail erect when in the presence
of a keeper, and the wings should never be drooped/stooped. Behaviour that may seem out
of character may include failure to respond to the presence of keeper/unfamiliar noise
(door opening, lock clicking) with an alert response; Junglefowl are naturally observant
and will always be aware of their surroundings. Upon faecal examination, normal
droppings should not be too loose, but at the same time can vary according to diet
(watery faeces are expected after consuming watery greens such as lettuce). The colour
of dropping ranges from dark brown/light brown/green. Black droppings may indicate
bacterial infection, loose droppings or the passing of parasite eggs could indicate stress/
parasitical worms.
8.2. Detailed Physical Examination

A physical check to determine health is beneficial by examination. Body condition is the most relevant form of exam and can easily be done by gently applying pressure around either side of the sternum (breast bone) where breast tissue should be present, only the keel of the sternum should be felt. If the full sternum can be felt by physical exam the bird is probably underweight. Weighing the bird using a cardboard box on kitchen scales is a good indicator following a physical body condition exam. While under the physical the bird should be given an oral exam by placing the thumb on the lower mandible and gently flexing it downwards to exhibit the oral cavity. Eyes should be checked and the bare comb and facial skin should be closely examined for small parasites such as mites as well as cuts and lacerations that maybe present. The vent should be checked for any discharge and should be clean from blocked faeces/bits of substrate. Physically running two fingers over the vent will give a good indication of any swelling etc. Galliformes are prone to many issues with their legs and feet, a physical exam of the condition of scales should see them to be clean and sleek with a healthy shine. Toe nails should also be clear, red colouration or swelling at the base of nail is a good indication of irritation or infection. Legs should have a perching reflex when pressure is applied at the base and toes should be spread naturally, not crooked or overlapping.

-A Guide To Pheasants & Waterfowl, their Husbandry, Care & Management by Dr. Danny Brown

8.3. Routine Treatments

Besides physical examinations, the only routine treatment required for captive Junglefowl is parasitical treatment. Like most ground dwelling birds Junglefowl are prone to worm infestation, birds should be treated via direct application or dilution of medication in the birds water every 12 weeks. Mites and lice are also common in domestic poultry, and a possibility in captive Junglefowl; birds should be visually checked for external parasites bi-monthly and routinely sprayed or ‘dusted’ for mites as a preventative or treatment bi-monthly/as necessary. It’s important to know routine environment sprays for parasites should be conducted more frequently, depending on the enclosure, residual insecticides such as Coopex could also be used to treat for mites/lice it’s important to spray boxes, furnishings, bedding etc.

8.4. Known Health Problems

External Parasites

Aetiology- Red Junglefowl are susceptible to external parasites that usually cause minor discomfort and are easily treated, although if left can cause serious health problems. Mites, lice, fleas and rarely ticks are the most common external parasites and range in size from 0.5mm mites to 1cm ticks, which feed on blood under the feathers or around the fleshy comb or bare facial skin.

Signs: Mites are usually the most common case of parasite infestation and can be mistaken for dust until you notice their slow movements over the entire enclosure of the birds infected. Mites can be white, brown or red depending on the species and are usually found along the wing and flight feathers, the comb, between the leg scaling etc. It’s important to note that bird lice often prefer the under-coverts of the flight feathers and it’s important to treat this area.

Treatment is inexpensive and effective, its more so an inconvenience of repetition spraying the entire enclosure, and the birds using a commercially available mite and lice spray. Vetafarm Avian Insect Liquidator is a good example of a residual mite spray that can safely be sprayed on the birds from 30cm away, and be used on the environment preventing re infestation for up to 8 weeks. Lice require the same treatment. Ticks may require veterinary removal depending on the species, smaller ‘bush’ or ‘dog’ ticks maybe removed with tweezers from the base of the ‘bite’ removing the whole arachnid.

Prevention: It is difficult to have full control of external parasites, but regularly insecticidal treatment of the birds and enclosure will ensure they don’t become a further health hazard.

Internal Parasites

Aetiology- Internal parasites, namely ‘worms’ are common parasites usually found in the digestive tract, gizzard, lungs or intestine. The worms are usually ingested, either first hand or second handedly by the host. Worm eggs are excreted in the droppings of a host by the thousands, these eggs can stay viable in open conditions for up to a year, and in that time are unintentionally picked up by other birds through foraging. Parasitic worms can be spread through a secondary host by consumption, which means a prey item such as a slug or beetle can ingest the parasitic worm eggs and pass them onto a larger animal that consumes them, therefore repeating the cycle. The following worms are most prevalent in Junglefowl:

Roundworm – Found in the digestive tract.

Hair worm – Usually found in the oesophagus, crop, intestine and proventriculus. Also referred to as Capillaria.

Gizzard worm – Present in the gizzard

Gapeworm – Found in the lungs and trachea.

Tapeworm – Found in the intestine.

Signs- Signs of internal parasite infestation are increased appetite, irregular weight
gain/weight loss, watery droppings/diarrhoea, pale egg yolks, general inactivity, 
fluffed/lazy posture, lack of alert response, pale wattle and comb skin, 
‘gasp ing’ (extending the neck and gaping).

Treatment- Many treatments are commercially available, most can be diluted with 
water and treated over a 3 day span. Some medication can be applied directly to the 
mouth or crop needled. Worm prevention should be a routined treatment and 
repeated every 3 months to ensure no re infestation occurs.

Prevention- Preventing internal parasites can prove challenging, especially in a 
species like the Red Junglefowl which spend majority of their time on the ground, 
digging, feeding, dust bathing making them prone to infestation. Good husbandry 
practices and a regularly worming regime are the only preventive methods to 
ensure worms do not become a serious health problem.

Marek’s Disease

Aetiology- Marek’s disease is an extremely contagious herpes virus that can survive 
in an environment at ambient temperature for up to 68 weeks. The virus is 
exclusive to Galliformes, namely Gallus gallus including all domestic breeds and 
Junglefowl; it has also been recorded in Turkeys, Quail and Pheasants. The virus is 
spread by dander/feathers shed by an infected bird and can be spread through wind, 
plant spores, physically (clothing, furnishings, feed, boots), or through any physical 
contact as well as saliva (note birds sharing water/feed sources) it however cannot 
be spread vertically through an infected bird to an embryo. The virus causes many 
different manifestations depending on the strain as the virus has mutated into 
different strains, most however effect younger birds prior to sexual 
mat urity. Morbidity is anywhere between 10-50% and mortality is up to 100% with death 
being common from secondary disease effects as Marek’s destroys the immune 
system.

Signs- Signs of Marek’s disease varies and mocks other diseases/viruses which can 
be make its diagnosis difficult. There are however more common signs of the virus 
that may help identify it with multiple symptoms these are as follows:
Paralysis in the wings/legs/neck: Often the first observant signs of Marek's disease 
is limping/the loss of use in one leg. At first it appears the bird may have physically 
hurt itself, and might be slightly limping or resting it’s leg in discomfort. Wing 
paralysis is similar, the wing may appear drooped or ‘off balance’, neck paralysis 
usually involves the neck becoming coiled in advanced cases or the head being 
tilted horizontally in earlier stages. A combination paralysis is also common, with 
partial loss of use in the legs and wings. This is all a direct response from the 
viruses attack on white-blood cells.
Ocular Deformities: The pupil of infected birds may appear deformed or ‘keyhole’ 
shaped, the iris may be discoloured, and minor discharge may be present.
Cutaneous infection: Birds showing signs of the disease may have damage to the 
feather follicles appearing uncharacteristically ‘dry’ or ‘dusty’. Lesions on the skin 
can appear all over the body as ‘crusty’ nodules (especially around the facial skin
Lymphoma’s/Neoplasms (Cancerous tumours): The deadly effect of Marek’s disease, its attack on white blood cells causes internal tumours and nerve damage which begins to develop throughout the birds body usually beginning in the thymus (neck, crop, mantle area) and spreading to other organs (heart, kidneys etc) eventually causing death, or secondary death due to starvation through paralysis/tumour or respiratory through tumours. These symptoms can only be viewed in a necropsy after death.

Respiratory trouble/Fleshy skin discolouration: As brachial lesions and heart lymphomas form, the bird may struggle to respire which causes considerable gasping. A good note to this symptom is the change in colouration of the comb and facial skin to a darker purple as blood flow is effected.

Food disorientation/Waisting away: Birds that have had their nervous system effected by the virus by paralysis, ocular damage, or cancerous growths that have effected the digestive system may not be able to feed correctly and can lose weight as a result, which often results in rapid ‘waist away’ which is often associated with the virus.

Treatment- There is no cure for Marek’s disease, an outbreak is extremely difficult to control and due to the contagious nature of the virus, its high mortality rate, hard diagnosis, and it’s ability to stay active in an environment for such an extended amount of time makes it extremely dangerous from a quarantine point of view; as it can infect an entire collection of birds. There is an immune booster for Marek’s virus commercially available in the poultry industry, the booster is given as an injection at chicks between 1 and 3 days old to allow an immunity to be built, the vaccine has little to no effect on older birds/birds already infected. The booster does not give complete immunity to the birds, and they still can be effected, it just simply increases their immune strength from a young age. Some birds will survive the virus, or never display any symptoms of the virus depending on the strain. These birds can live a normal life and produce un-infected eggs that can be removed and produce chicks free of disease, with a naturally strong immunity to Mareks. It is crucial to remember that no matter how visually healthy a bird exposed to Marek’s appears, it must be treated as a carrier and will contain ‘blueprint’ copies of the disease in its DNA and continue to shed the virus through cycle.

Prevention- Preventing exposure to Marek’s disease is hardly controllable, the disease could be spread from an infected property via a wild bird, perhaps feeding and collecting infected dander and taking it to another property nearby infecting a different flock is hardly controllable by the keeper. Although steps can be taken to decrease the chance of infection. Good husbandry practices is the best start to preventing Marek’s, the enclosure should be free of dust especially around the bedding area, and regularly disinfected.
**Avian Leukosis**
**Aetiology** - Avian Leukosis like Marek’s disease is a tumour causing virus that attacks white blood cells, ruins the immune system and effects poultry, quails, pheasants, guineafowl and rarely columbiformes (pigeons and doves). The disease is extremely contagious is spread through contact between birds, and unlike Marek’s virus it can be spread by an infected hen into the egg, producing infected offspring. The main difference between Marek’s virus and Leukosis is that Leukosis will not effect the nervous system.
**Signs** - Birds affected by Leukosis can exhibit a range of clinical signs including decreased feed intake, exhaustion, decreased water intake/dehydration, runny stools/diarrhoea, rapid weight loss, change in demeanour/anti social behaviour and reduced egg production.
**Treatment** - There is no known treatment of Leukosis, affected birds should be euthanised.
**Prevention** - Due to the contagious nature, prevention from Leukosis is difficult. Good bio security, and husbandry practices in relation to hygiene will reduce the chance of infection, an important note is that the virus can be destroyed in the environment with disinfectant.

**Fowl Pox**
**Aetiology** - Fowl pox is an external disease spread by biting insects and by direct wounds, perhaps caused by fighting. The disease causes proliferative lesions and thick scabs, as well as lesions in the upper respiratory tract.
**Signs** - proliferative lesions and thick scabs, as well as lesions in the upper respiratory tract, loss of appetite or thirst.
**Treatment** - Birds can be vaccinated from an early age, there is no cure for infected birds although many will recover with good husbandry, nutrition and regularly clean bedding to restrict the spread of the virus in the environment.
**Prevention** - Good biosecurity, maintenance, and restricting breeding opportunities for mosquitos will reduce the risk of fowl pox. Once infected birds have recovered they are immune for life.

**Coccidiosis**
**Aetiology** - Coccidiosis is a broad range of parasitic diseases, that multiplies itself and becomes an oocyst feeding in the digestive tract of it its host. In Junglefowl it is caused by nine species of Eimeria protozoa, which are picked up from contaminated food, faeces and can infest an environment under the right conditions, such as an enclosure with poor drainage, damp bedding, general unhygienic conditions such as heavy soiling. The parasite causes internal bleeding, and eventual death as well as infestation if left untreated.
**Signs** - Symptoms of Coccidiosis include overall ‘dirty’, ‘rough’ appearance, soiling around the vent, lethargic behaviour, sleeping extended periods throughout the day, lack of appetite or thirst, sudden death, lack of blood flow through comb/
facial skin. Blood in the droppings of the bird is a good indication for Coccidia although that shouldn't be confused with the natural shedding of the stomach lining through faeces. Yellow foamy droppings are reported in severe cases. 

**Treatment**- Luckily Coccidiosis can be treated using commercially available medicated feeds, which is particularly effective for young birds prone to infection. Liquid medication can be diluted with water, and treated although it depends on the severity of the parasite. Vaccination can also be administered to chicks between 1-3 days old 

**Prevention**- Good husbandry practices truly are the best way to prevent Coccidia infection, make sure the enclosure has a proper drainage system and bedding, feed and roosting areas are kept dry and clean.

- A Guide To Pheasants & Waterfowl, their Husbandry, Care & Management by Dr. Danny Brown
- Poultry Diseases, 6th Edition Edited by Mark Pattison, BVSc, MSc, PhD, MRCVS
- dpi.nsw.gov.au/content/agriculture/livestock/poultry/health-disease

### 8.5. Quarantine Requirements

Red Junglefowl are susceptible to a wide array of diseases, especially due to the domestic poultry industry. There are some diseases such as Leukosis, Marek’s that have long incubation periods, some over a year old. From a quarantine perspective, most of these diseases are exclusive to the species, and birds obtained from outside a collection should be guaranteed free of disease/been vaccinated or be part of an insurance population disease free. For Coccidia and internal/external parasites a quarantine period of minimum 8 weeks is recommended.

- Poultry Diseases, 6th Edition Edited by Mark Pattison, BVSc, MSc, PhD, MRCVS
9. Behaviour

9.1. Activity

Red Junglefowl are diurnal and descend from roosting just before sunrise around 5:30-6am and ascend for roosting just before dusk between 5-6pm depending on the time of the year. Levels of activity throughout the day is routinely familiar and will revolve around the maintenance of the keeper. In the wild foraging is carried out as a group, and is led by the cock bird into clearings or cultivated fields to do so at first light. The reason for this is that Junglefowl are nervous feeders and can fall victim to many arboreal and terrestrial predators in the wild, feeding in open areas is risky business especially in cultivated areas where humans are present and therefore feeding at first and last light is the best option. In captivity their behaviour as a flock is much the same, foraging seems to be the first activity of the day and a morning feed of something exciting exhibits that behaviour.


Captive Red Junglefowl foraging in Australia- Photo by Zac Mackenzie
9.2. Social Behaviour
Junglefowl are extremely social birds, more so than any other genus of pheasant. Junglefowl conduct most of their day to day activities in a colony fashion, especially when foraging. The cock bird is the lead, usually with a favoured, dominant hen; with the harem in close pursuit. Feeding is often accompanied with many soft clucks and whistles keeping the flock in constant contact of who’s where and who may have found something of interest. Mock feeding is a common social behaviour used to build bonds, reiterate trust and is often observed coming into breeding.
- A Guide To Pheasants & Waterfowl, their Husbandry, Care & Management by Dr. Danny Brown

9.3. Reproductive Behaviour
When coming into season Junglefowl hens may start to 'notice' each other more, and compete for flock heir-achy, as well as the roosters attention. Cock birds will usually favour a dominant hen, and centre a lot of attention around her mock feeding, foraging closely, roosting together etc.
- A Guide To Pheasants & Waterfowl, their Husbandry, Care & Management by Dr. Danny Brown

9.4. Bathing
Red Junglefowl rarely bathe in water, although they enjoy dust bathing on a regular basis which removes some external parasites and relieves the bird depending on the weather conditions.

9.5. Behavioural Problems
Red Junglefowl aren't prone to many behavioural problems, Jungle cock birds aggression is probably the most commonly seen issue in these birds. Roosters tempers vary, most aggression seen is a territorial reaction from a keeper entering an enclosure or as a 'power trip' for himself as a test of dominance. It is important not to punish the rooster in an attempt to damper his spirit as it will only worsen it! Trying to shift this aggression with positive reinforcement, enriching the birds to another point when aggression arises such as throwing a handful of mealworms or a handful of greens maybe enough to re shift your perception to the cock bird.
- A Guide To Pheasants & Waterfowl, their Husbandry, Care & Management by Dr. Danny Brown
9.6. **Signs of Stress**

Signs of stress associated with Junglefowl include panting ‘gaping’, ‘tight’ feather, over-alert statue/on edge, wings drooped and fanned when overheated. Lethargic behaviour, squatting during capture in between running/retreat flight.


9.7. **Behavioural Enrichment**

Red Junglefowl can easily be enriched in captivity by the simplest means. As a foraging species, these birds will take advantage of any loose substrate to forage for hours. Piles of grass clippings, mulch, leaf litter, straw, sand will keep a flock of Jungles stimulated for hours especially if items of food are turned over in the substrate. Junglefowl appreciate any form of greenery and a tray filled with soil with commercial greens ‘planted’ across it will allow the birds to exhibit natural behaviour by digging up the roots of a plant and consuming it as a flock. Greens can also be hung via string or thin chain from the roof of the enclosure as a ‘sling’ form of enrichment the birds can peck at back and fourth. Other forms of enrichment include the use of clear PVC tubing, with holes drilled and mealworms that will slowly release as it’s rolled across the enclosure floor. It is important to note that environmental enrichment is probably the most effective and natural way to stimulate these birds.


9.8. **Introductions and Removals**

Red Junglefowl can defiantly become an issue when introducing new birds into an established group. Flock heir-achy is established and that can become out of balance when a new bird is introduced into a flock, much like their domestic poultry cousins. When introducing a new bird into an established flock, after quarantine the bird should be placed in an adjoining aviary/enclosure without a visual barrier; perhaps with a single bird from the existing flock to familiarise with, this is usually best to do with the rooster so he can have an established relationship with a new hen bird, before being amalgamated back into the flock.


- A Guide To Pheasants & Waterfowl, their Husbandry, Care & Management by Dr. Danny Brown
9.9. *Intraspecific Compatibility*

Red Junglefowl, like most species of Pheasant are aggressive and cannot be housed as pairs or groups of mixed sexes with most other Gallinaceous birds. Hen birds can be housed with pairs of other species of pheasant, considering space and shelter but close observation should always be kept. Cock birds, especially younger birds should be ok to be housed with cock birds of different Pheasant species temporarily, out of view of females; again a close watch should be made.


9.10. *Interspecific Compatibility*

Interspecific compatibility can be good to disastrous for this species. As long as space permits and there are no other ground dwelling species (this includes any species that frequently visits the enclosure floor ie. columbiformes) Junglefowl should able to be housed reliably with other unrelated species such as parrots, softbills as long as sufficient feeding stations are provided as well as roosting opportunities. Cock birds can become quite spiteful and can hold grudges against certain individuals for no reason, and there is no room for misjudgment by the keeper before he is able to cause harm to another inmate.


9.11. **Suitability to Captivity**

Red junglefowl are possibly the most versatilely adaptable bird species in the world, the domestic chicken is a product of human captivity and domestication. This secures the species suitability for inclusion in any collection, being relatively easy to house and cater for the Red Junglefowl is a unique Phasianidae member and a great, important introductory species to the family, and any of the other 3 species of Junglefowl.

10. Breeding

10.1. Mating System

Red Junglefowl have a complex mating system within their group. The dominant male in the harem carries out most courtship behaviour throughout the year, although subordinate cocks will also occasionally court hens at the periphery of the group. Social groups of wild Junglefowl are consequently defined as having a polygynandrous mating system, in which multiple females are exercised by dominant male(s) but occasionally other subordinate males may have the opportunity to mate with hens within the harem, this is a case of harem polyandry. Courtship is predominantly carried out by the dominant cock throughout the year with a peak in the late afternoon and early in the morning, after descending from roosting. Courtship and even mating is carried out throughout the year as a means of maintaining and ‘building’ relationships and bonding within the harem.

Courtship involves a display by the cock bird standing tall, stiff in a dominant gesture and waltzing quickly towards the hen with one wing spread completely covering the legs and almost touching the ground. He hops quickly in this motion, advertising himself to the hen perhaps throwing in a few lapped circles around her. This is followed by and usually continued with mock feeding in which the cock picks up a favoured item of food and softly clucks to bring himself to the hen’s attention; he will then drop the food directly in front of her as a gift. This behaviour can again be used for bonding throughout the year as well as directly as a means of courtship.


10.2. Ease of Breeding

Red Junglefowl are considered free breeders and are generally not hard to breed if your enclosure and pairing setup of the birds is correct. For nesting captive birds will use a wide range of nesting sites both artificial and natural. In planted enclosures, ideally the hen will lay near a secluded, dense shrub in a small scrape on the ground lined with soft leaves and twigs. Red Junglefowl will also make use of artificial nest sites like drums, wooden open boxes, paint tins cut open etc. for this reason and the potential to produce up to four clutches per year this species should be considered fairly easy to breed.


- A Guide To Pheasants & Waterfowl, their Husbandry, Care & Management by Dr. Danny Brown
10.3. Reproductive Condition

Reproduction condition in Red Junglefowl isn't prominent besides a moult prior to the breeding season. Both sexes may experience flushes of colour through bare skin during breeding.

10.3.1. Females
Hen birds don’t go through any major changes for reproductive condition, notably in pure birds the bare facial skin may become more flushed with colour but this is varied.

10.3.2. Males
In the wild cock Red Junglefowl moult into breeding plumage around August from eclipse plumage, it is in their new moult that the feathers appear at their best, undamaged from the environment for courtship.

10.4. Techniques Used to Control Breeding
Controlling undesired breeding in Junglefowl can include removal of the eggs or piercing the eggs with a pin exposing the Albumen making them sterile, spraying the eggs with cooking oil also prevents aspiration and will stop an embryo from developing. The two latter options need to be employed within 4 days of laying.
10.5. Occurrence of Hybrids

In captivity hybrids of the Red Junglefowl have been recorded with a number of other Galliformes including other Pheasant species and Guineafowl. True to type Junglefowl will rarely hybridise with any other genus due to their unique stature in the pheasant family. They will however, readily hybridise with the other 3 species of Junglefowl the Sri Lankan, Green and Grey although this is not a consideration in Australian collections due to the absence of these birds. In parts of Asia the Green and Red Junglefowl are deliberately crossed with the hybrid being referred to as the Bekisar, the faunal symbol of east Java it is said to be both a spiritual mascot and is used presently for crowing competitions in roosters. Males are occasionally fertile while hens are not, these hybrids were traditionally used by the original inhabitants of the Sunda Islands and have contributed outcrossing genes to many of the current feral populations of domestic chickens in the pacific islands. Notably this has caused a decline in the Javan populations of both Green and Red Junglefowl in their pure form.

- A Guide To Pheasants & Waterfowl, their Husbandry, Care & Management by Dr. Danny Brown

Bekisar photo by Cemani Farms
10.6. **Timing of Breeding**

Captive strains of Red Junglefowl are capable of breeding throughout the year with a peak activity in Spring, and lessened activity in March-May. Environmental factors such as prolonged rain/humidity in tropical areas could be a stimulant.

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10.7. **Age at First Breeding and Last Breeding**

Red Junglefowl become sexually mature at 9-12 months and are capable of breeding. Fertility by this age is surprisingly good in both sexes at 85%. For best breeding results birds between 5-8 years old have the best productivity.

-J. Jeremy Hobson

10.8. **Ability to Breed Every Year**

Red Jungle fowl hens will produce two to four clutches per year.

10.9. **Ability to Breed More than Once Per Year**

Red Jungle fowl hens will produce two to four clutches per year

10.10. **Nesting, Hollow or Other Requirements**

Red Junglefowl are free breeders and will utilise many different natural and artificial nest sites in captivity. In the wild a scrape in the ground, in the coverts of bamboo or thickets is where the hen will sit for 19-21 days. In captivity hollow logs placed horizontally, open plastic drums, paint tins, wooden nest boxes raised offer a bit of privacy for the birds and will be happily accepted.

- A Guide To Pheasants & Waterfowl, their Husbandry, Care & Management by Dr. Danny Brown
10.11. **g Diet**

In the wild it has been documented that the breeding diet is almost exclusively made up of termites which is what the chicks are fed on for the first 2 and a half weeks of age. Although captive strains of Red Junglefowl would appreciate termites and other small means of livefood it is defiantly not necessary to breed these birds with the implementation of modern poultry diets exceeding 18-21% protein. In my experience with Junglefowl livefood is always relished and is great enrichment, especially for young chicks encouraging natural foraging for both the parents and young. This could aid in free ranging birds foraging skills and dependance on pelleted formulas. Small crickets commercially bought are a great alternative to mealworms and lower in fat.


10.12. **Incubation Period**

19-21 days incubated solely by the female
10.13. **Clutch Size**
13-18 eggs, cream coloured without any markings measuring 45x45mm.

10.14. **Age at Fledging**
Chicks are considered dependant by 10-12 weeks of age, but can easily be artificially reared from the egg.

10.15. **Age of Removal from Parents**
Chicks are considered dependant by 10-12 weeks of age, and can safely be removed from the hen bird.

10.16. **Growth and Development**
Red Junglefowl chicks grow rapidly and can fly at as little as two weeks of age. By six to eight weeks cock birds may begin to crow and potentially mate with their mother/
surrounding hens. Dependance is achieved at 10-12 weeks where young poults should be removed from the flock in smaller enclosures to avoid aggression, not only by the cock but by other hens.

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**Junglefowl chicks- photo by cackle hatchery**
11. Artificial Rearing

11.1. Type
Due to the large demand of commercial incubators for the poultry industry, Red Junglefowl eggs can be incubated in most varieties of incubators including:

**Household Incubators** - Household incubators are a general term for small scale incubators that can be fully automatic, semi-automatic or manual in settings.

**Single-stage Incubator** - Single stage incubators are namely designed for eggs to be incubated at the same stage in embryonic development. The incubator is designed with the correct basis of humidity and ventilation, and is repleted for each setting and discharged for each transfer of eggs.

**Multi-stage incubation** - Multi stage incubators rely on continual adjustment for a set time period. These are large scale incubators and are a costly alternative relies on the constant operation of the machines for a set period of time.

11.2. Temperatures and Humidity
Artificial incubators should be set at 37-39 degrees celsius with a humidity range of 50-55% with an increase of 10 degrees for the final three days of incubation.


11.3. % Egg Mass Loss
Weight loss for Junglefowl eggs during incubation should ideally be 11-13 percent in the first 18 days of incubation.


11.4. Temperature and Humidity
In the final 3 days of incubation the humidity should be between 65-70%, the temperature remaining at 37-39 degrees celsius.

11.5. to Hatch Interval

Pipping of the egg is usually present in Junglefowl and domestic poultry chicks at 19 days of age. After the initial pipping the chick rests for 3-8 hours before making a three quarter turn inside the egg and resumes pushing the egg ‘cap’ for an average of 40 minutes. After completely removing itself from the shell the chick will rest before attempting to stand.

-https://www.backyardchickens.com/threads/pip-to-hatch-how-long.60869/

11.6. Brooder Types/Design

Red Junglefowl chicks can be comfortably reared in all commercial, household and homemade brooders. The chicks are not aggressive like some species of pheasant, and can be housed in mixed clutch groups. The main considerations for a brooder are space, heat, security, substrate, utensils and ventilation. It is important not to overcrowd the brooder, and due to the flighty nature of pure Junglefowl each chick should have 1 square foot of space, doubled by 2 weeks of age. For day old chicks an ambient temperature of 33 degrees celsius must be maintained at around 55mm from the brooder top to the substrate.


11.7. Temperatures

The ambient temperature of the brooder should be 90-95 degrees celsius for one week old chicks. It is important that there is a point of indirect heat for the chicks to cool down if need be. The focal point of heat should be reduced by 5 degrees celsius each week during brooding.

11.8. Feeding Routine
Chicks can be easily catered for with a good quality, commercial chick starter crumble. This should be offered in a large shallow dish preferably ceramic. This will ensure the chicks don’t miss the feed while foraging around the brooder, and will also stop them from knocking the bowl over. Unfortunately it’s hard to avoid the crumbles becoming soiled, and they will need regular cleaning and replacing perhaps twice a day. Due to the large array of commercially available chicken starters, some are medicated, usually for Coccidiosis which should be taken into consideration. Jungle fowl chicks relish livefood, more so than domestic poultry and will take small mealworms, whiteants and crickets from 2-3 days old. It’s important to offer green food of sorts, preferably finely diced spinach, endive, asian greens etc. The chicks should be upgraded to chicken grower crumbles at eight weeks of age until 20 weeks where they can be converted to an adult, maintenance diet.

11.10. Pinioning Requirements
Pinioning can be performed at one day old by a competent operator using a beak trimmer. However this is unnecessary for most instances of housing the Red Junglefowl and won’t be explored in detail.
- A Guide To Pheasants & Waterfowl, their Husbandry, Care & Management by Dr. Danny Brown

11.12. Identification Methods
Identification methods for chicks can be as simple as a drop of food dye on the saddle of the chick. Other methods include zip ties or cuts of velcro bands although caution must be taken with substrate/brooder furnishings getting caught in the band, as well as the correct diameter for a growing chick. Commercially available bands are usually only in accessible in adult bird sizes.

11.13. Hygiene
The brooder should be spot cleaned daily, with a complete clean and substrate change every third day depending on the style of brooder, size and number/age of chicks. A general disinfectant such as F10, Viral Fx or Avicare can be used safely during cleaning.
11.14. Behavioural Considerations

It is important to monitor aggression within the brooder, especially if Junglefowl chicks are housed with more ‘delicate’ species of Pheasant chicks such as Golden Pheasants.

11.15. Use of Foster Species

‘Broody hens' are well known foster parents for a range of pheasant species. Jungle fowl hens are particularly popular choices for pheasant cross rearers as they exhibit more preferable behaviour and there’s less chance of imprint from domestic hens. Junglefowl hens make excellent parents and there are few instances where the hen will abandon chicks; if however this is the case most species of Pheasant will make appropriate foster parents but Gallophs such as Kalij or Swinhoe’s might be preferable to the Chrysolophus genus.
12. Acknowledgements

I would like to thank Graeme Phipps for assisting me with some valuable books needed to compile this manual.
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15. Appendix

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