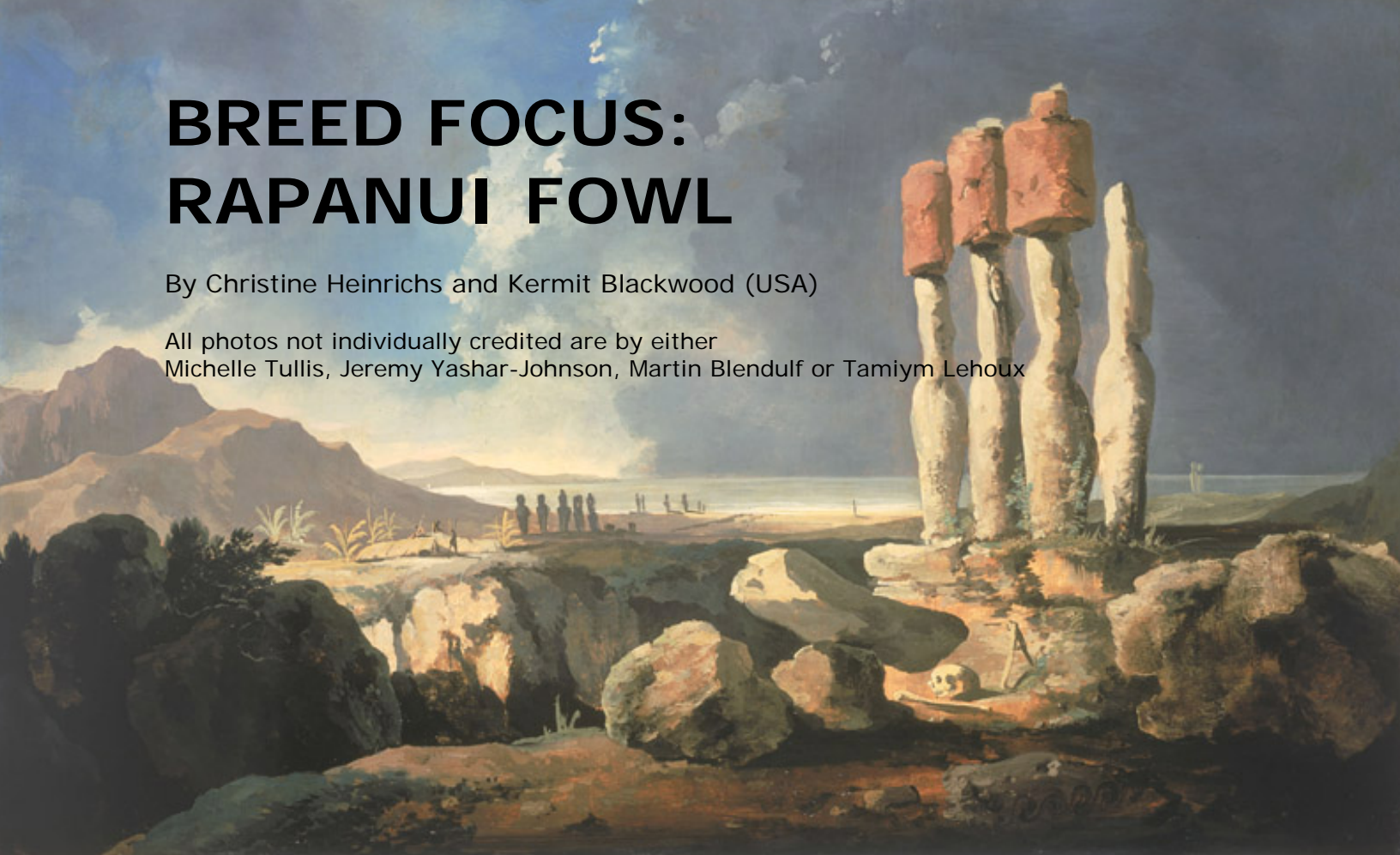


# BREED FOCUS: RAPANUI FOWL

By Christine Heinrichs and Kermit Blackwood (USA)

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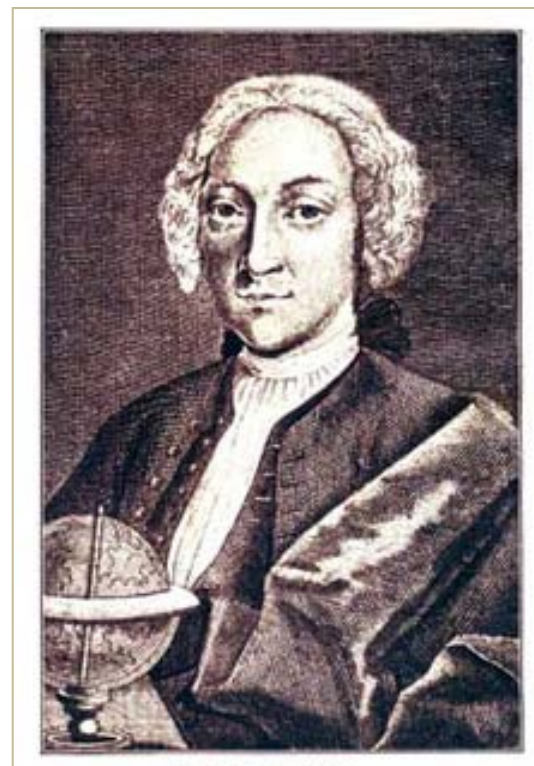


**Above: A View of the Monuments of Easter Island, Rapa Nui.**  
Oil on panel, by William Hodges, 1870.

On Easter Sunday, April 5, 1722, Dutch sea captain Jacob Roggeveen landed his ship the *Tienhoven* on an island the inhabitants, the Rapanui, called *Te Pito o Te Henua*, The Center of the World. Captain Roggeveen renamed it Easter Island.

**Right: Captain Jacob Roggeveen.**

By the time the Dutch arrived, Easter Island's population was in decline. There were probably no more than about 2,000-3,000 people living on the island. Maximum population estimates of previous eras range from 4,000-15,000. Theories differ as to the cause of their demise. Barbara A. West writes in the *Encyclopedia of the Peoples of Asia and Oceania*, "... the Rapanui experienced a tremendous upheaval in their social system brought about by a change in their island's ecology..." Jared Diamond (an American biogeographer) drew attention to the connection between ecological overexploitation and the downfall of society. In Easter Island we are describing a situation where wholesale ecological exploitation destroyed a civilization. They'd cut down every last trees making it impossible to so build seaworthy boats to sail away. As in other Polynesian cultures, the Rapanui people knew cannibalism. By the 18<sup>th</sup> century, the population of Easter Island were coping with staying warm from Antarctic winds in winter without sufficient clothing.

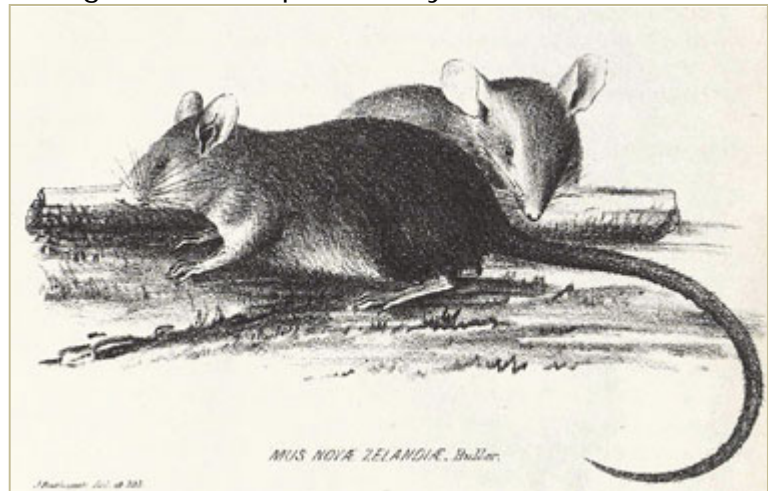


Terry Hunt and Caro Lipo's studies suggest that humans made permanent settlements on Easter Island around 1200 AD, and that the population never exceeded around 3,000 people. They counter that rats accompanying Pacific Seafarers devastated the island's *Jubaea* palm forests. The rats, without any predators, rapidly increased in numbers, doubling their population every six or seven weeks. Rats gorged on the abundant food source, destroying the palms' fragile seeds. Humans and rats made it impossible for Easter Island's forests to recover.

Beyond the Polynesian rat, the Rapanui people met their worst foe in the form of highly communicable disease. Europeans introduced their virus's, which soon decimated the vast majority of Rapa Nui's population. What was left of the indigenous Easter Islanders were enslaved for labour in Chile and Peru. At one point during the 1860s, over a thousand indigenous people were taken from the island, leaving a remnant population of only around 100 by the 1870s.

Seafarers from Indonesia and Austronesia started sailing across the Pacific via Melanesia and Micronesia around 3,500 years ago. At some point, they landed on Easter Island, bringing with them unique chickens as well as the Polynesian rat. By about 1,000 years ago, the island had been stripped of its native ecosystem.

**Right: The Polynesian rat**  
**(*Rattus exulans*)**



### Oceania and Easter Island

Located 2,150 miles (more than 3,000 kilometers) off the coast of Chile, Easter Island is the world's most remote inhabited island. Technically speaking, Easter Island is a single massive volcano, 63 sq. miles/163.6 km<sup>2</sup> in size, which rises over 10,000 (3 km) feet from the ocean floor. Three additional extinct volcanoes mark its landscape. Once densely

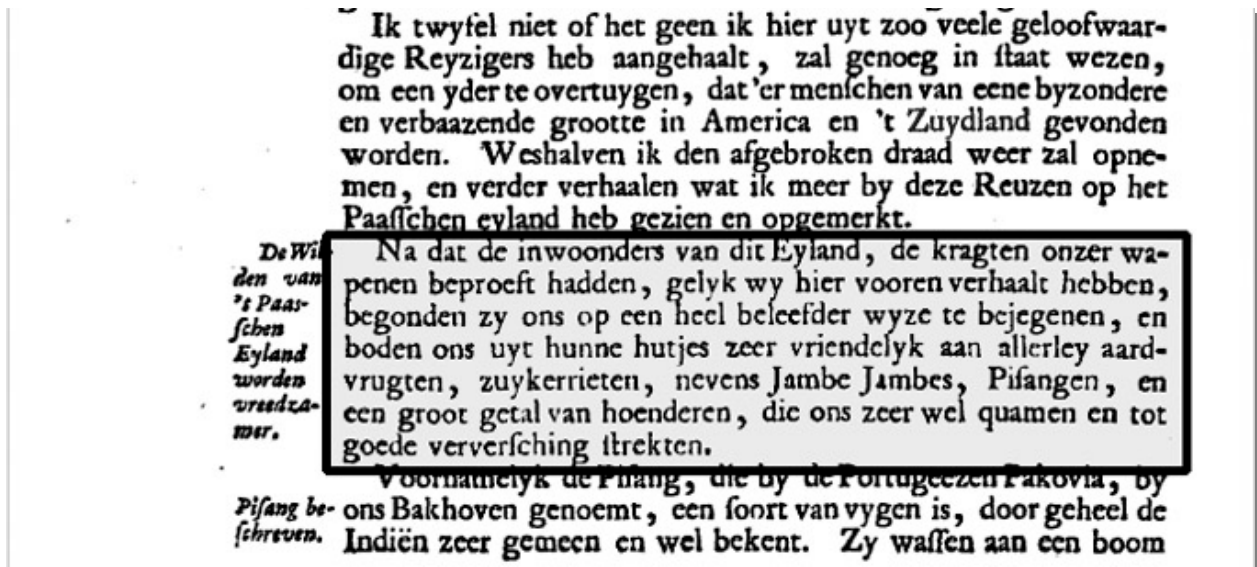


vegetated in a unique ecosystem dominated by old growth palm forest, it sustained flocks of migratory birds and long extinct endemic species of insects, land snails, flightless rails, herons and parrots. Polynesians probably burned the vegetation to make way for agriculture. The Polynesian rats that came with them made forest recovery impossible by consuming the fruits and seeds of endemic plants.

All that remained of Rapanui when the Dutch arrived was an enormous dust-colored island covered in dry grasses and those monolithic stone heads. The only land animals present on the island were chickens of various kinds, each with

their own highly descriptive names. There were no wild land birds -- not even bats,

snails, or lizards -- surviving when the Dutch arrived and “discovered” the island. The most common creatures on the island were reportedly flies, a condition that exists to the present day.



Above: From Roggeveen's journal of his Pacific voyage, page 50; text in Old Dutch. Translation: After the inhabitants of this Island had learned the power of our guns, as we wrote before, they began to treat us very polite and kindly offered from their huts all sorts of earth fruits, sugar cane, Jambe Jambes, bananas and a large number of chickens, which we liked very much and were a good refreshment.

Tuber-bearing crops were carried to the island by ancient seafarers. Of the 48 plant taxa on the island, 14 come from prehistoric Marquesas in Polynesia. Some plant species originated in Indonesia and Sri Lanka, probably transported via Oceania and Polynesia. Most staples, including manioc, Oxalis tubers, taro, *Ipomea* sweet potatoes, Andean yams and beans are endemic to northwestern South America. These intriguing facts underscore the need for further research on cultural exchange between Polynesian and western South American civilizations.



Left: Red Jungle Fowl. Photo AE/Jan Willem Schrijvers.

### Polynesian chickens

No historical records exist to document what kinds of chickens originally came to Easter Island. Molecular studies indicate some of them are unique to Oceania. Skins of feral birds naturalized on Polynesian islands, collected by naturalist explorers, clearly belong to remarkably variable Pacific Red Junglefowl morphotypes. This island semi-species may be descended of more than a single geographic

race of the Red Junglefowl, carried throughout Oceania by Polynesians. Although not a formally recognized class, Oceania fowl are distinct. The Oceania Class would theoretically, from an ethnozoological basis include landraces of the Polynesians and Austronesians. That would include Malagasy, Malay and Saipan Games; the various breeds of Rapanui fowl, Koro Sea and Ketawa. One day they might even include the South Americans and Ecuadorians, provided hard science can deliver irrefutable evidence that the Junglefowl reached the Eastern Pacific during Pre-Columbian times.

Oceania fowl range in size from small Basket Bantams to large Austronesian Games, some of which were reported to be bald-necked, robust bodied birds with parasol tasseled heads. One has to wonder if these Polynesian bare-necked giants weren't descended from the giant fossil Junglefowl discovered in the Near East and sub-fossils in China, *Gallus giganteus*? Long before Europeans arrived in the Pacific, Oceania Seafarer Chickens were traveling back and forth across vast distances. likely descend from archaic Indonesian breeds in their ancestry. They were probably selectively bred more or less exclusively within Oceania and historical territories of the Austronesians. Their unusual vocalizations sound slightly different from typical domestic roosters and are one of their most distinguishing characteristics.

**Right: This Ponape rooster is a feral island race of Pacific Junglefowl, maternally descended of *Gallus gallus bankiva*, the Indonesian Red Junglefowl.**

**Photo credit Tamiym Lehoux.**



*Ponape Junglefowl is a feral race of the Pacific Junglefowl, a semi-species maternally descended of *Gallus gallus bankiva*, the Indonesian Red Junglefowl together with other Red Junglefowl subspecies. A significant percentage of the early sires appear to have been bekisar hybrids, between *Gallus varius*, the Green Junglefowl and *G. gallus bankiva*. The Indonesian Red Junglefowl is distinctive genetically from *Gallus gallus spadiceus*, the maternal ancestor of 98 percent of all domestic chickens. Only a very few Indonesian breeds appear to be genetically linked with *G.g. bankiva* and sub-fossil chickens unearthed in Samoa and Easter Island may be closely related.*

Archaic Indonesian breeds and wild island races in Oceania probably tend to be descended of Indonesian Red JF mothers because this is where the earliest seafarers populating Oceania appear to derive from Indonesia. Though Oceania Junglefowl may not often appear so, their populations are likely genetically intergraded with *Gallus varius*. They're Red Junglefowl with a number of Green Junglefowl male ancestors and many centuries in the past. In Indonesia this phase of a hybrid that's been bred repeatedly back to domestic fowl, to the point that it's difficult to distinguish from a domestic chicken is referred to as bekikok, which is possibly an onomatopoeic word.

Whereas most skins of wild birds collected on islands in Oceania and the Pacific are nearly identical to those of S.E. Asian Red Junglefowl, a number of study skins collected from various archipelagos over several centuries exhibit some characteristics that suggest that possible hybrid ancestry with additional Junglefowl species.

Pacific Junglefowl collected in Marquesas and the Society Islands, two regions from which the earliest Polynesians may have embarked from on their way to Rapa Nui, share some unusual traits with Sri Lanka Junglefowl hybrids. This may be consequent of the birds being derived of Tamil seafarer basket bantams. They may have bred for diminutive fighters and traded them widely. Other feral populations appear to be descended from Green Junglefowl hybrids. To be absolutely clear, their primary ancestors are Red Junglefowl but certain morphological traits; plumage specialization, number of rectrices; facial skin morphology and vocalizations may be reminiscent or even shared with these other species.

**Right: Adult male Ayam Bekisar (tem-minckii-type), = *Gallus varius* (Shaw, 1798) B × *Gallus gallus*. Illustration from Proceedings of the Zoological Society of London 1848-1849 by Joseph Wolf.**



From the most ancient times, Indonesia was a locus of selective breeding and dispersal of domestic fowl. Sri Lankan Tamil and Southern Indian Asil game fowl were among the birds traded from the ancient ports of Indonesia like the famous city of Bantam, Java. No records of selective breeding and exportation of fowl exist, but Junglefowl were being kept many thousands of years ago throughout Southeast Asia and may well have reached Polynesia before the vast majority of domesticated breeds came into existence. Theoretically speaking, coveted lineages of some of the world's earliest experiments in selective breeding would have been among the stocks carried into the archipelagos of the Pacific and beyond by the ancestors of the various Oceania cultures.

The ancestors of Austronesian cultures developed most chickens in South East Asia. They were foremost of religious and ceremonial archetypes. Artificial selection by the world's first poultry breeders would likely have placed importance on certain physical aesthetics that helped the stock stand out from the rest and were probably

considered most valuable. These early stocks were little more than slightly tamed Red Junglefowl rather than truly domesticated birds. They were Red Junglefowl with bigger combs and maybe the hens also had slight combs. Perhaps this phase of the domestic fowl was identical to Red Junglefowl but didn't have an eclipse moult.

In time, males of other Junglefowl species, some Red and some Grey and even Green and Sri Lankan, were used by the earlier poultry breeders to produce

coveted hybrids. Why? Because this is how unique individuals came to exist and these specimens were more valued than many others, because they were readily distinguishable from others. What is more, they could be bred to type, a novel idea when the whole concept of phenotypic diversity in tame Red Junglefowl was practically non-existent.



**Left: Red Junglefowl by Edward Neale (1833–1904).**

As female hybrids are generally infertile, males of the same crossings were probably more valuable to seafarers, though the females produce lots of infertile eggs. Some of these unusually beautiful and/or fierce hybrid roosters may have been highly valued and coveted, the chosen individuals to be carried across the ocean.

**Right:  
Koro Sea Island Basket  
Bantam, descended of  
Pacific Junglefowl.**

Most island races of the Pacific Junglefowl are very similar to Indonesian and/or Vietnamese Red Junglefowl, differing only in the number and length of rectrices (tail feathers) and/or presence of unusually colored/ morphologically distinctive dorsal plumage. The terminal ends and width of the hackles and mantle in males and barring on the wings and tails of



females may also belie ancient hybridization in their ancestry. An oversize comb or presence of a gular lappet; the position of the metatarsal spur may help distinguish

a wild hybrid from a Red Junglefowl. The same can be said for non-moulting /gradual moulting versus eclipse moulting.

### **Return to the wild**

Some islands are inhabited by Red Junglefowl, without obvious hybridization, indeed these populations may represent pristine populations unpolluted with the genes of domestic fowl or other species. Regardless, with few exceptions, most islands probably had very limited founders and those founders were likely in many instances of domestic, wild and hybrid origin. Founder effect occurs when a new colony is started by a few members of an original population, giving those individuals and their traits more genetic influence on the population than that of their progenitors. The founder effect on an island population may mean that the colo population has reduced genetic variation from the original population or a non-random sample of the genes in the original population. As hybrid males were likely present in most of the small isolated populations, especially on the smaller, more isolated islands, founder effect is compelling. It helps us learn about the formation of species. Founder effect is/was obvious in these populations of Oceania domestic fowl when they were first collected during the days of the Dutch East Indies Company, and is of considerable interest to researchers studying ecological adaptation, species diversification and island biogeography.

**Right: The progenitors of “Kirikiri” fowl were collected by Dutch traders in settlements around Cape South, Easter Island during the mid-18<sup>th</sup> century A.D. They are one of the seven races of Rapanui fowl.**



**Left: This hen is prominently crested with a short tail. Crest and tail lengths may vary. Photo credit Martin Blendulf.**



So mongrel chickens revert back to their wild form after a few generations running wild on an island. They literally go native. Their collective phenotype eventually balances out to some extent. The founder were released islands a very long while ago. At least some of the unusual hybrid roosters vanished into the hinterland,

avoiding humans altogether. On very isolated islands these hybrids may have sired a more significant number of progeny than on islands where larger and more dynamic populations of domestic Red Junglefowl were maintained for utilitarian purposes; where more frequent importation of novel domestic chicken genes would arrive and swamp out the rare wild flock. On very remote islands these wild hybrids probably continued to flourish, genetically perpetuated via intercrossing with those few independent-minded and flighty game hens (descended solely from the Red Junglefowl) that hatch in every clutch and take off for the jungle. These mixed groups of feral chickens and naturalized Junglefowl would have theoretically dispersed into the forests as wild birds free of human intervention. Primitive red fighting game hens that wandered from human settlement were likely to hatch and rear chicks sired by wild hybrids. Their progeny would go on to survive human predation and natural catastrophes like the typhoons that wreak havoc on these islands. As long as a viable population of Red Junglefowl inhabited the islands, the male hybrids' genetics were passed down from generation to generation as those males outcompeted the Red Junglefowl and domestic roosters.

**Right: Green Junglefowl, stamp.**

The blue egg gene may have an origin in Green Junglefowl, *Gallus varius*. Only Green Junglefowl produce a very slightly tinted egg. Eggshell color of Green Junglefowl naturally occurring in the Lesser Sundas, a group of smaller islands extending east from Java to Timor, differ slightly from island to island. This may be an attribute of natural selection as seabirds are inveterate egg thieves. Eggs that blend with sky and stone have a selective advantage. It may also prove to be the case that those populations carry the EAV-HP retrovirus documented in many sea birds.

The effects of heavy metals and micro-nutrients ingested by Green Junglefowl and their hybrids foraging on shoreline detritus and isopods is not known but may play a part in what pigments pass from the hens into their bile, subsequently shading their eggshells. Populations of birds on islands high in a specific mineral may produce eggs of a slightly different tint than those islets lacking this mineral. Breeding certain Rapa Nui fowl with first generation Bekisars has increased the egg tint of blue egg layers, but fertility of females is non-existent and the males are flighty and pugnacious. They are also vulnerable to common chicken diseases. Green Junglefowl are in danger of becoming extinct due to exposure to infectious disease and poaching for bird markets. Crossing Green Junglefowl with domestic chickens to create Bekisars is an ancient tradition in Indonesia but it threatens the very existence of the Green Junglefowl. This is an even larger problem in captivity. The population of Captive Green Junglefowl is very small. Exposing Green Junglefowl to domestic chickens is very likely to introduce bacterial pneumonia to the wild species, which domestic chickens are largely immune to do. They act as carriers to mycoplasmas, which are deadly to Green Junglefowl, especially chicks and moulting adults.





### Rapanui varieties

Only vague references in the Rapanui language remain to guide the present as to the breeds and varieties of domestic fowl the Rapanui people possessed. Moa Tu' A Ivi Raa', fiery ember yellow-backed, and Moa Tea, white ash-hued, were evidently highly valued and held ceremonial value related to funerals and births. The bright yellow back of Tu' A Ivi Raa' is its defining feature, exhibited in skins collected in Marquesas in the early 19th century and in rare antiquities like the Ecuadorian Huastec chicken and Peruvian Quetero.



**Above: Saudeleur fowl (Moa Nehunehu Ohirohiro) exhibit iridescent violaceous coloring.**

Moa Nehunehu Ohirohiro (Saudeleur) was violaceous, while the Moa Pipipipi Hakahaere Te Reo was spangled with a laughing crow. It may have had long ear tufts. The Moa Totara were frizzled and much prized for their plumage, demonstrated in feather art. They may also have been valued in dowries and as gifts between clans.

**Right: A Saudeleur hen.**





Left and below: Saudeleur fowl, male and females. Known on Rapa Nui as Moa Nehunehu Ohirohiro, a violaceus (iridescent purple) morph. Photo credit Jeremy Yashar-Johnson.



Moa Pipipipi Hakahaere Te Reo may have been reminiscent of the ancient Sulewesian Ketawa and wild Society Isles races of Pacific Junglefowl. These birds are characterized by unusual plumage so unlike any wild junglefowl. The spangled phenotype appears in four part-hybrids between junglefowl species, in experiments of captive birds. This may present clues to the origination of the original genetics responsible for this phenotype.



Left: Kirikiri\_X\_Ponape composite.

Below: Wallikiki X Huastec composite (with peafowl).



Moa Gao Verapaka, according to descriptions in Polynesian accounts were large Austronesian bare-necked games, likely an invaluable food source and a prized fighting bird. The Moa Garahurahu, color of dark

ashes; Moa Rikiriki, tiny, crested with multiple toes; Moa Tarapiko Taki Eve', tiny, no tail; and Moa Pakeke, basket fowl, may have been maintained primarily for eggs.

There is no mention of cuckoo or red chickens on Easter Island.

That an isolated culture with no means of leaving the island would maintain such a diversity of breed types, even after the collapse of their civilization and the island's ecosystem, is compelling. Color strains and other slight differences could have held great significance to the Rapanui culture. Chicken soap operas, the endless jockeying for position in the peck order, certainly provide a reliable source of entertainment! The birds' intrinsic value as companions and fellow inhabitants, much less sustenance, on this wind-swept island cannot be overstated.

### **Present Day Stocks**

By the 18th century, Dutch explorers brought these exotic bantams back to Europe. Popular and in demand, they spread from Dutch ports throughout western Europe. Selective breeding stabilized sports of certain aesthetics popular to poultriers of their day, as rare ornamental breeds kept as companion animals. Watermael Bearded bantams; Herve bantam, Dutch bantams, Ardenner bantams and d'Anvers Bantams are just a few antiquities whose ancestors were carried to Europe by the Dutch East Indies Company.



**Left: Raraku females are generally dark brown or black. They have small crests but no wattles.**

**Photo credit Tamiym Lehoux.**

Today, Rapanui Fowl can be described only in generalized terms. Rough composites are all that remain. Experimentations with selective breeding by successive generations of fanciers is ongoing. Current Rapanui fowl are known from composites collected in different eras in fairly recent history from different ports and often bred together to form landraces. Whether distinct breeds ever developed is open to debate. In most cases, one or two

unusual roosters became coveted sires of domestic bantam sub-breeds maintained by the Dutch, the Belgians and Japanese. Outcrossing back to Junglefowl has occurred with some lines, mirror phenotypes of the morphotype are bred for use as outcross when deleterious traits accentuated by close breeding disrupt perpetuation of a line. For example, a Raraku descended partially from the original Raraku and partially from a Pacific Junglefowl hybrid might be bred to a long-tailed fowl to recover the resplendent tail of the original Raraku, lost in its outcrossing with the Junglefowl.

The remaining stocks of most Rapanui include gracile, tiny birds no larger than a small pigeon with prominently or subtly crested heads, with or without a long tail, referred to as Kirikiri. They often lack wattles. Their combs are complex and broad

if they have any at all. Males often exhibit brilliant blue-green and or white throats. Their faces are sometimes hot pink with yellow. Those that are composites with Pakeke have feathered faces and closely resemble the Tojuda morphotype of coastal Peru, analogous with our Ameraucauna. Of course they also closely resemble their more recent descendant the Belgian Quail d'Anvers.



**Above: Kirikiri Rapanui. The roosting bird is a Kirikiri\_X\_Ponape hybrid hen.**

The larger, more powerful Tapu race of Rapanui fowl are sometimes melenotic with bluish skin. They were probably of ceremonial value, as were the luxuriantly plumaged Moa Tu' A Ivi Raa' (yellow backed) breed and the long-tailed Raraku.

Raraku may have been Easter Island's long-tailed breed. Their purple and yellow plumage can be seen in Polynesian feather cloaks. Raraku are large, broad-winged, dark-colored birds with unusual voices. They may have originally been a game fighting breed.

Raraku females are dark, generally black; both genders have small, neat crests. Their facial skin is unusually vivid crimson with black eyelids. Males are often platinum blonde and violaceous with iridescent purple plumage. They have four toes and like the Araucana and Koeyoshi exhibit a single gular lappet, as opposed to two separate wattles. Their extended pea combs are strange affairs with no two males having identical headgear. Raraku roosters are particularly feisty for a few weeks of the year; shy and retiring the rest of year.



Left:

A violaceous Raraku male. The Raraku is probably descended of the Saudeleur. Males are iridescent violet with either birchen or red coloration. The original Raraku was probably raised for its plumage and as a fighter.

Photo credit Tamiym Lehoux.

Easter Island's bare-necked fowl may have been descended of the original Austronesian games, those enormous flightless, henny-feathered birds known today as Malagasy in Africa, Germany and; Ayam Bali in Indonesia; Ganoi in South East Asia and Madagascar, the Philippines and Reunion Island. Austronesian/Indonesian fowl depicted in Portuguese and

Dutch illustrations 18th and 19<sup>th</sup> centuries exhibited interesting crests and bizarre combs. Their skulls may have resulted from adaptations consequent of climatic challenges. They may have developed in fowl kept in regions with intense heat, and humidity on sparsely vegetated islands. Modern prominently crested fowl like the Paduan may have inherited their curious topknots and aberrant skulls from some long-extinct form of the Austronesian game. Given the prominence of crested breeds on Easter Island, this naked necked game may have been at the foundation of the trait there.



*Rapanui fowl, including this Kirikiri hen, are excellent mothers. They are ideal for foster-rearing delicate exotic pheasant and partridge chicks. Due to centuries of close breeding, modern fertility has declined some. More recent outcrossing has dissolved genetic bottlenecks in most viable lines. Photo credit Michelle Tullis.*

## Conservation

To conserve unique qualities of the remaining Rapanui fowl will require the stewardship of modern poulterers. The challenge with these birds is to maintain them with selective breeding in mind. The landrace composites delineated by certain morphological traits such as plumage coloration and voice should be selected from small clutches and bred to type. In a short time, the experienced poulter will have filtered their composites into distinct morphs, refined through appropriate closed breeding groups.

The most important ones to conservation are the wild red Pacific Junglefowl and other island fowl. The captive stock are perpetuated through artificial selection, breeding to recover ancestral traits represented in study skins. There is quite a lot of phenotypic diversity exhibited in these skins. It's not difficult to consistently perpetuate those four or five morphs.

Lastly, common domestic fowl diseases are wiping out captive populations of Junglefowl. Hybrid genetics polluting their gene pool is still more deleterious. Please do not engage in or encourage the production of Junglefowl hybrids. This is of vital importance to the long-term health and viability of captive Junglefowl populations. Many Indonesian and Japanese breeds, maybe all of them have a bit of Green Junglefowl ancestry. Start working with breeds like the Black Sumatran and Koeyoshi and if you collect Basket Bantams or Raraku or what have you, you'll need to keep them in closed flocks. There's no point in crossing them. They're for selective breeding within their gene pool.



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