ORANGUTAN TAXONOMY AND NOMENCLATURE

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The taxonomy of the orangutan has been confusing and is still the subject of much debate. Questions at the specific and subspecific level are still being investigated (Courtenay et al. 1988). The following taxonomic information is taken primarily from Groves, 1971.

HIGHER LEVEL TAXONOMY:
Order: Primates
Suborder: Anthropoidea
Superfamily: Hominoidea
Family: Pongidae (Includes extant genera *Pan, Gorilla and Pongo).*

HISTORICAL TAXONOMY AT THE GENUS AND GENUS SPECIES LEVEL:
Genus
Pongo Lacepede, 1799.
Ourangus Zimmerman, 1777 (Name invalidated).

Genus species (*Pongo pygmaeus* Hoppius, 1763).
Simia pygmaeus Hoppius, 1763. Type locality Sumatra.
Simia satyrus Linnaeus, 1766.
Ourangus outangus Zimmerman, 1777.
Pongo borneo Lacepede, 1799. Type locality Borneo.
Simia Agrais Schreber, 1779. Type locality Borneo.
Pongo Wurmbii Tiedemann, 1808. Type locality Borneo.
Pongo Abelii Lesson, 1827. Type locality Sumatra.
Simia Morio Owen, 1836. Type locality Borneo.
Pithecus bicolor I. Geoffroy, 1841. Type locality Sumatra.
Simia Gargantica Pearson, 1841. Type locality Sumatra.
Pithecus brookei Blyth, 1853. Type locality Sarawak.
Pithecus owenii Blyth, 1853. Type locality Sarawak.
Pithecus curtus Blyth, 1855. Type locality Sarawak.
Satyrus Knekias Meyer, 1856. Type locality Borneo.
Pithecus Wallichii Gray, 1870. Type locality Borneo.
Pithecus sumatranus Selenka, 1896. Type locality Sumatra.
Pongo pygmaeus Rothschild, 1904. First use of this combination.
Ptihecus wallacei Elliot, 1913. Type locality Borneo.

CURRENT TAXONOMY

The current and most accepted taxonomy of the Genus *Pongo* includes one species *Pongo pygmaeus* and two subspecies *P.p. pygmaeus* (the Bornean subspecies) and *P.p. abelii* (the Sumatran subspecies) (Bemmel 1968; Jones 1969; Groves 1971; Jacobshagen 1979; Seuarez et al. 1979 and Groves 1993).

Although hybrids have been produced in captivity, Andrews (1984), Groves (1986) and Janczewski, Goldman and O'Brien (1990) have suggested that the degree of difference between the two subspecies is considerable enough that the two forms be considered separate species. Based on further investigation of the physical appearance, behavior, morphology and biochemical and chromosomal characteristics of the subspecies, the authors concluded that the range of variation does not warrant separate species designation. They concur on the subspecific taxonomy of *Pongo pygmaeus pygmaeus* and *Pongo pygmaeus abelii.*

Recent molecular genetic research results show a distinctive difference between the Bornean and Sumatran populations different enough from one another to warrant separate species classification (See Orangutan Genetic Diversity Chapter, this volume).

Rohrer-Ertl (1988) suggests an alternative taxonomy for the orangutan: Genus *Pongo* von Wurmb, 1784 and species *satyrus* Linnaeus, 1758.

He divides the species *Pongo satyrus* into three subspecies:
Pongo satyrus satyrus, the recent Sumatran subspecies and Sumatran and Javan fossil and subfossil forms, *Pongo satyrus borneensis,* the recent and subfossil Bornean subspecies and
Pongo satyrus weidenreichii, fossil and subfossil forms from China, Loas and Vietnam.

PHYSICAL APPEARANCE AND DESCRIPTION OF THE TWO ORANGUTAN SUBSPECIES

The two subspecies of orangutan exhibit a broad range of variation in phenotypic characteristics (Rohrer-Ertl 1988). The physical differences are most apparent in adult males. Perkins and Maple (1990) state that the determination of subspecies based on physical appearance alone is imprecise. Subspecies identification has been refined by karyotyping and genetic analysis. The diverse physical characteristics used to differentiate the two subspecies are listed below.

Table 1

Physical Characteristics of the Two Orangutan Subspecies

Pongo pygmaeus pygmaeus (Bornean subspecies)	***Pongo pygmaeus abelii*** (Sumatran subspecies)
hair color	**hair color**
darker, almost maroon (A)	lighter, more cinnamon colored (A)
vary from red rust to dark maroon or blackish brown (D,E)	light rusty red or reddish cinnamon (B,E)
young have bright orange hair which darkens to chocolate or maroon with age (C)	young are paler orange becoming cinnamon with age (C)
never have white hairs (D)	may have white or yellow hair on face, in beard or groin (C, D)
more uniform dark pelage (C)	pelage a mixture of light and dark hairs (C)
less variation in color (E)	more variation in color (E)
hair length	**hair length**
less hair about the head density and neck (A)	more hair about the head and neck (A)
young thinly haired (A)	young have denser hair (A)
shorter hair overall (C)	longer hair, infants have long hair on top of head; adult males have long hair on arms, sides of back and beard (C)
hair texture	**hair texture**
hair stiff, shiny and brittle (C)	hair is finer and fleecier (C,D)
stiffer and shinier (D)	dry in texture (D)
hair pattern	**hair pattern**
no information	short hair comes on head forward over top of head (D)

Pongo pygmaeus pygmaeus (Bornean subspecies)	***Pongo pygmaeus abelii*** (Sumatran subspecies)
facial hair	**facial hair**
beard is less noticeable (A, E)	beard is always present and well developed (A,B,E)
less hair about the face (C)	beard is lush, often gives a mustached appearance (A,E)
in young face is usually bare (A)	females also have long beards (A)
beard is darker, from orange to dark red (C)	both sexes generally hairier about the face (C)
facial hair has rough tousled appearance (C)	young are hairier about the face (A)
facial hair generally short, scruffy and less noticeable (D)	males may have long pointed or double pointed yellow or orange beards (C)
	facial hair neater in appearance (C)
	both sexes have longer facial hair (D)
	long yellow beard grows out of upper jaw giving a mustached appearance (A,D,E)
shape of face	**shape of face**
broader faced with prominent muzzle but have a great deal of variation (C)	more elongated and flat with a definite O-shape (B)
upper and lower jaws are pronounced (prognathous) (A,D)	jaw is less pronounced (A)
figure eight-shaped face (D)	long oval face with marked cheek hallows (C,D)
facial color	**facial color**
area about the eyes has a bluish cast (A,F)	face grey (F)
eye color	**eye color**
darker eye color (A)	usually clearer and (variable) paler (A,D)

Pongo pygmaeus pygmaeus (Bornean subspecies)	***Pongo pygmaeus abelii*** (Sumatran subspecies)
look or appearance	**look or appearance**
in adult males "unfriendly glower" (D)	in adult males "haughty quizzical" look (D)
eye/nose angle (i.e. angle between center of eyes and center of nasal septum) (E)	**eye/nose angle (i.e. angle between center of eyes and center of nasal septum) (E)**
in adult males angle is 48-66 degrees, mean 57 degrees (C)	in adult males angle is 37-51 degrees, mean 45 degrees (C)
cheek pad/flange (the one character in which a very clear difference appears to exist between the two subspecies (E)	**cheek pad/flange (the one character in which a very clear difference appears to exist between the two subspecies (E)**
in males development starts in 8th year,fully developed by 15th year (A,E,F)	in males development, sarts in 10th year, ully developed by 20th ear (A,D,E,F)
naked or covered with short, bristly hairs, is quite shiny (A)	hair on pad is light in color, very noticeable and silky (A)
skin is dark brown or black, naked or has sparse red hair (C))	have tufts of short white or yellow hair) (plumous) (C)
curve outward from the face (A,E)	rest flat against the face (A,E)
swing forward like "blinkers", appear rounded and lumpy (C)	extend laterally, parallel to the face, gives the face a diamond shaped appearance (C)
heavier and less rigid, develop laterally from both top and sides of face, giving a square appearance (C)	
junction of the pads above the brow results in a deep wrinkled pad (C)	**Pad/flange development in a subordinate male may be inhibited by the presence of a more dominant male (Kingsley 1982; Nacey-Maggioncalda and Czekala this volume).*
throat/gular pouch	**throat/gular pouch**
large and pendulous in adult males (A,D,E)	less noticeable in adult males (A,D,E)
larger and generally naked (C)	smaller and usually hairy (C,F)

Pongo pygmaeus pygmaeus
(Bornean subspecies)

body size/ build

tendency to become obese in captivity (A,E)

robust, often obese (C)

Body Weight

Information on body weights is scarce (E).

Presence of nail

nail may be missing from hallux (A)

foot placement/locomotion

hooked foot cannot be placed flat on ground (C,D)

walk with foot curled on outside edge (C,D)

spend less time bipedal (C,D)

Pongo pygmaeus abelii
(Sumatran subspecies)

body size/ build

larger in body length, appears more muscular, rarely becomes overweight (A,E)

thinner, lankier, tend to be more muscular or linear in build (C,F)

Body Weight

Information on body weights is scarce (E).

Presence of nail

see information below from Rijksen (1978)

foot placement/locomotion

foot more plantigrade (C,D)

walk with feet splayed, but flat or nearly flat (C,D)

-in captivity spend more time bipedal, often walk with chest out (C,D)

A; Jones 1969
B; Bemmel 1968
C; MacKinnon 1975
D; Mallinson 1978
E; Courtenay et al. 1988
F; Groves 1971

Rijksen (1978) distinguishes two morphological types of Sumatran orangutan, *Pongo pygmaeus abelii:*

Table 2

Morphological Types of Sumatran Orangutan, *Pongo pyemaeus abelii (Rijksen 1978)*

Dark-haired, long-fingered type	***Light-haired, short-fingered type***
hair color	**hair color**
brown to maroon	reddish cinnamon to rusty red
skin and facial color -	**skin and facial color** -
dark brown to blackish	light to dark grayish brown
body build	**body build**
delicate build, slender extremities, long fingers and toes	more heavily built, stouter limbs, short, thick fingers and toes
weight	**weight**
smaller and lighter in weight	larger and heavier in weight
digits and nails	**digits and nails**
well developed thumb and hallux; both have nails	small/rudimentary nails, thumb and hallux; nail may be missing on thumb but always absent on hallux

According to Rijksen, the light-haired, short-fingered type may show considerable variation in characteristics such as finger length. The dark-haired form shows great consistency in characteristics such as long, slender limbs and nails on both thumb and hallux.

CONCLUDING REMARK

As would be expected, subspecific hybrids produced in captivity show intermediate characteristics between the Bornean and Sumatran subspecies. Captive animals should be karyotyped (consult the species coordinator at lori410@mindspring.com for a listing of qualified laboratories) before being identified to the subspecific level.

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