

Ara macao (Scarlet Macaw, Red-and-yellow Macaw)

Family: Psittacidae (Parrots and Macaws)

Order: Psittaciformes (Parrots, Macaws and Cockatoos)

Class: Aves (Birds)



Fig. 1. Scarlet macaw, *Ara macao*.

[<http://www.widedesktopwallpapers.net/desktop.php?pid=1496> downloaded 3rd October, 2011]

TRAITS. The adult scarlet macaw, measured from head to tail, is 85 cm long and weighs 1200 g. Additionally the lengths of its wing and long pointed tail are 41 cm and 53 cm respectively (Renton, 2000). The males have slightly longer tails and larger bills than the females. As depicted in Fig.1 its hooked upper mandible is white and lower black. The scarlet macaw's face is white and lacks feather lines. It has a mostly scarlet plumage, yellow median upper coverts and blue flight feathers on its wings. The outer feathers of the tail are tipped blue (Hilty and Meyer de Schauensee, 2003). Two toes of the scarlet macaw are positioned forwards and the other two backwards, hence it has zygodactylous feet.

ECOLOGY. The very conspicuous scarlet macaws can be found throughout Central and South America inhabiting humid forests, especially along waterways, savannahs and open woodlands (Inigo- Elias, 2010). The canopies of these forests provide nesting cavities, water and diverse

crops of wild nuts, fruits and flowers. They have also been observed eating large quantities of clay at river banks and cliffs (Henderson et al. 2010, Attenborough 1998).

SOCIAL ORGANIZATION. According to Renton (2000) scarlet macaws are found in bonded pairs or small family groups comprising both parents and one or two fledged young. But they can form flocks of 20-30 individuals during feeding. Dominance hierarchy is characteristic of scarlet macaw flocks. The higher- ranking scarlet macaw will exert behaviours such as beak gape, peck threat, wing flapping, rushing and flight approach whereas the submissive will crouch, fluff their feathers, lift a foot or completely avoid assertive flock members (Tynes, 2010).

The older very aggressive breeding males are at the top of the hierarchy. They are followed by the adult females which have formed pairs with these males. These females are only dominant when the males are within two feet of them, in the absence of the males they are placed below all males and females. Sexually immature females form their own small social groups. They move, feed and socialize together. These inter-individual bonds are the weakest among the females as they are less likely to defend each other. Contrastingly the four or five year old male macaws become more aggressive and interested in challenging their strengths and 'proving' themselves. They form strong relationships with other male macaws of the same age, strength, and social standing.

FORAGING BEHAVIOUR. Scarlet macaws forage as part of their feeding ecology. Flying at a speed of 35 miles per hour they can travel tens of kilometers a day in search of food (Lowman and Rinker, 2004). Immediately after sunrise they begin foraging. During the dry season they eat mostly the fruits of the silk cotton tree *C. pentandra* and wild cashew tree *Anacardium excelsium*. In the wet season the breadnut tree *B. alicastrum* and the Royal palm *S. rostrata* are heavily fed upon (Vaughan et. al., 2006). They feed with red-and-green *Ara chloropterus* and blue-and-yellow *Ara ararauna* macaws. Flocks of macaws feed in silence possibly to avoid giving away potential food sources to competitors (Elphick and Couzens, 2003).

Nameth and Vaughan (2003) observed two adults with their two juveniles simultaneously feeding on two different tree species; the adults were eating from a Royal palm whereas the juveniles were eating from a nearby Jobo *Spandias mombin*. The Royal palm 30-35m in height, had large bunches of mature palm nuts that hung inverted and had to be removed by the scarlet macaws in mid-air. In the same flight these nuts were quickly carried to a nearby tree and then partially eaten before deliberately dropping them. They scratch a thin line using the sharp pointed end of their beaks and then shear the seed open. They stand on one foot and use the other foot to manipulate the seed or fruit (Fig.2). The Jobo tree 20m tall, provided many perches and nuts surrounded by visible yellow fruits for the juveniles. The juveniles stayed on the same tree but walked, from one point to another on the branches, in an uncoordinated manner and often appeared to lose their balance and drop their fruits. All four macaws vocalized throughout feeding. Soft single syllable calls were produced by the juveniles while adults shrieked loudly.

BEHAVIOUR AT CLAY LICK. After eating they fly off to rivers with cliffs of clay. They gnaw at the clay and consume large quantities. It is believed that the clay absorbs toxins from some of the seeds that only scarlet macaws are capable of eating (Attenborough, 1998). Scarlet macaws can be found at clay licks from 9-1pm, with peak feeding during the hours of 10-11am. The scarlet macaws on the treetops carefully choose a section of the clay lick before proceeding to feed, as their vocalizations increase the macaws begin to climb down the vines, using their feet

and beak, toward the lick. Once one bird lands on a section, others quickly follow and they remain in that section. At the clay lick they are very noisy making loud contact or flight calls when a predator is nearby. The clay lick area also facilitates socializing where pairs spend more time preening (using its beak to straighten and clean the feathers) each other (Burger and Gochfeld, 2003).

COMMUNICATION. Vocal communication: consists of vocalizations to relay specific messages (Tynes, 2010). The flight call is characterized by a loud harsh 'RAAAAH' (Hilty and Meyer de Schauensee, 2003). Contact calls are low, travel for long distances and produced to locate flock members. They have low call frequency possibly because they are brightly coloured and may rely on vision to locate flock members, but their bright colouration may also make it easier for predators to locate them and a low call frequency pays off for easy detection (Breedveld 2007; Tynes 2010). Alarm calls when a predator is nearby, other calls let flock members know food has been located, and are used to specify social relationships within the species and identify potential mates (Tynes, 2010).

Visual communication: displays can have several different meanings and in order to correctly identify the reason behind any display, one must look at the factors surrounding the display. Blushing of the bare facial patch or head feathers raised can signify excitement, aggression or arousal. If the head feathers are held tightly flat against the head this may mean the macaw is frightened, stressed or unsure. Stomping up and down on tall legs or raising their wings (Fig.3) are used to intimidate a competitor or predator by making them appear bigger or used in courtship display (Tynes, 2010).

SEXUAL BEHAVIOUR. The breeding season lasts from late November to the end of May (Inigo-Elias 2010). They select holes in trees as their nest sites and can modify the size by chewing with their beaks. Scarlet macaws greatly defend nest sites (Renton, 2000). They are monogamous and maintain pair bonds throughout their lives.

The male fluffs his feathers out, spreads his feet apart and then slowly walks from side to side while bobbing his head up and down and extends his left wing out. To conclude the dance he stops and lengthens his tail to the left while his feathers slowly lie flat against his body. They also show a rush of colour in their facial skin, and 'eye-blazing' (where the iris is yellow/orange and the pupil remains black). Compatible pairs click their beaks and do a lot of preening (Fig.4) of each other's back, beneath the wings and around the vent. When they mate, the male and female backs face each other they move their tails out of the way, and rub cloacas together until the male ejaculates (Luescher, 2006). The females seek food from the males; wings fluttered and back, crouched, head tipped up. And through feeding a hormonal cascade is triggered that ends in the laying and incubation (28-34 days) of 1-3 round white eggs by the females (Renton, 2000).

JUVENILE BEHAVIOUR. The eggs do not hatch concurrently and so there is an older fledgling with one or two younger fledglings. All are born blind, weak and helpless. Both parents visit the nests four to seven times a day and spend about 20% of their time preening or feeding by regurgitation the fledglings. The fledglings spend about 70-80% alone and resting. They only interact with parents. After fledging young scarlet macaws fly within a 1km radius of the nest. Weaker fledglings spend about seven days within a 250m radius of the nest. Gradually they begin dispersing further away from the nest until they begin making daily flights between nocturnal roosts and feeding places. Before they begin foraging independently, manipulation

behaviour is greatly practiced by playing with small sticks and leaves, most likely to develop muscle coordination needed to handle food, and they become more social.

During weeks five and six siblings begin interacting with each other. By week eight the siblings begin to pursue each other while climbing on trees, fight using their feet and beaks and beat each other with their wings by hanging upside down and flapping. When they begin feeding on their own, parents lead them to Red manjack *Cordia coloccoca* trees that have small fleshy fruits which young macaws will find easy to manipulate and eat. Parents feed on this fruit until the fledglings begin doing the same after which they move to nearby Royal palm trees. Although palm nuts cannot be easily harvested and eaten by fledglings they follow the adults and clumsily attempt to open and eat the palm nuts. By following the adults they learn localities and periodic patterns of food resources at a landscape level (Myers and Vaughan, 2003).

ANTIPREDATOR BEHAVIOUR. Snakes, monkeys, jaguars and other large mammals are predators of the scarlet macaw. If the scarlet macaw is in the nest while being threatened it will cautiously monitor the situation until the danger is no longer apparent. However if the nest is directly threatened the macaws will either draw back into the cavity, make an alarm call or fly away quietly one by one (Sick, 1993).

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Fig.2. Scarlet macaw feeding on a beach almond nut.

[<http://birdingblogs.com/2010/daleforbes/scarlet-macaw-personalities> downloaded 4th October, 2011]



Fig.3. Two scarlet macaws with their wings extended.

[<http://travel.ezinemark.com/peru-the-amazing-land-773669c35620.html>
downloaded 31st October, 2011]



Fig.4. Pair of scarlet macaws where one macaw is preening the other.
[<http://www.pbase.com/lesliej/image/40926499> downloaded 15th October, 2011]