

## *Orthopsittaca manilata* (Red-bellied Macaw)

Family: Psittacidae (Parrots and Macaws)

Order: Psittaciformes (Parrots, Macaws and Cockatoos)

Class: Aves (Birds)



**Fig. 1.** Red-bellied macaw, *Orthopsittaca manilata*.

[[http://en.wikipedia.org/wiki/File:Orthopsittaca\\_manilata\\_-Brazil-6.jpg](http://en.wikipedia.org/wiki/File:Orthopsittaca_manilata_-Brazil-6.jpg), downloaded 6 December 2012]

**TRAITS.** The red-bellied macaw is a medium sized macaw of average length 18 inches and weight 370 grams. The tail is pointed and graduated which is typical of macaws. The feathers are coloured with a red belly patch, blue tinted forehead and upper wings, a grey tinted breast, and the underwings and undertail are a dull yellow. The face has bare yellow skin, different from other macaws being yellow and without feathered facial lines. The eyes are reddish brown. The beak is black. There is no sexual dimorphism; the only differentiation is in black bill of adults in comparison to the yellow bill of the young (Hilty and Brown 1986, 201; Hilty et al. 2002, 329). These macaws have group sizes of up to 100 and more. They are seen in flight mostly during the morning and evening periods. Its flight consists of steady, fairly rapid wing beats. Vocalization is typically the flight call, that is compared to that of a small child being reedy and

strained with urgent complaining and not of raucous quality (Hilty et al. 2002, 329; Athan 2010). The red-bellied macaw does not make a good pet species as it has selective feeding habits and extremely sensitive to its diet. Obesity is one of the problems they face and they generally do not survive well in captivity as aviculture would prove particularly difficult (Sweeny 2002).

**ECOLOGY.** The habitat of the red-bellied macaw is mostly extensively forested or savanna, palm forest with swampy wetland particularly connected to the *Mauritia flexuosa* palm (Hilty and Brown 1986, 201). In terms of distribution it is found mostly in the Amazonian South America including Columbia, Venezuela, Guyana, Suriname, Bolivia, Amazonian Peru, Brazil and Trinidad. They nest in holes of dead palms that are close to or surrounded by water (Fig. 2). They may move seasonally, due to the regional availability of food but are not likely to migrate otherwise. They are widespread in low lying areas and have large populations therefore not making them a conservation concern (Stattersfield 2000). However, habitat destruction is increasing as the palms are used for posts and artisan craft, such as hammocks and baskets. Deforestation is also prevalent with land being cleared for agriculture as well as human habitation (Athan 2010). Red-bellied macaws have a life span range of 15-30 years. Breeding season is February to May or June. The clutch size is 2-6 eggs with an incubation period of approximately 27 days. The young begin to fledge as early as the eleventh week. They take an average 2-3 years to mature and are particularly close to their parents.

Red-bellied macaws are avian frugivores that generally feed on the fruits of the palms namely *Mauritia flexuosa* of South America and *Roystonea oleracea* in Trinidad consisting of 94% of their diet (Fig. 3) (Bonadie and Bacon 2000, 1; Danell and Bergstrom 2002). Macaws eat fruit more for its nutritional content therefore ingesting less fiber and being endangered by plant toxins. Red-bellied macaws do not have to rely so much on supplementary methods such as clay licking (Gilardi and Toft 2012). They specifically need vitamin A in the form of beta carotene rather than oils like other macaws (Athan 2010). The red-bellied macaw has low abundance level at clay licking sites. *Mauritia flexuosa* fruit pulp has for example 53% fat, 43% carbohydrates and 4% protein (Villalobos and Araújo 2012).

**SOCIAL BEHAVIOUR.** Flock formation is a behaviour used for predator detection and avoidance, socialization, territorialism and foraging efficiency (Wilson 1975). It is prompted by instability of food resources and predation risks. An individual's predation risks are reduced by flocking. Flocking also increases probability of an individual locating food. A system for allocating food resources and maintaining social order is displayed in dominance relationships and the ranking of individuals (Seibert, 2006). Males generally have higher social positions in relation to ranking (Seibert, 2006). More specific behaviour is demonstrated in allopreening and allofeeding. Allopreening is a maintenance behaviour exhibited by these birds in which one individual uses its beak to groom another (Gill 1995). The regions groomed generally for macaws are the head, neck and tail. It is typically done between male and females and correlates to the pair bond interaction. There was observed however some isosexual allopreening, that is for example male with male that is attributed to sociality (Seibert, 2006). Allofeeding is the action in which one individual feeds another. This behaviour is characterized by crouching, lowering its head, fluffing its feathers and vocalization by females. The male responds by bobbing its head and grasping the female's beak at a ninety degree angle and regurgitating the food. This behaviour is tied to bird copulation (Seibert, 2006).

**REPRODUCTIVE BEHAVIOUR.** Pair bonding is a mutually beneficial relationship between males and females that are sexually mature. It is displayed in the cooperative

nurturing of young and characterized by allofeeding, pair participation in agnostic behaviour and close spatial association almost always touching (Seibert, 2006; Wilson 1975). Breeding season tends to alter the social hierarchy. The pair bond is believed to strengthen agnostic behaviour as an individual has a more successful aggressive encounters when their mate is near. Between the pair however, there is no agnostic displays (Seibert, 2006). As long as the female is within the flock the males do not exhibit affiliative behaviour however a pair bonding is not exclusive. Males assist in the incubation feeding and rearing of the hatchlings, guarding the nest and allofeeding their mate. However, as the female nests with her young, the male has the opportunity to have a secondary female. Parents generally provide parental care for their young throughout their infancy, which may span a year or more (Seibert, 2006).

**FORAGING BEHAVIOUR.** The red-bellied macaw generally feeds on *Mauritia flexuosa* fruits which are present during the dry season when other fruits are scarce, as well as other palms (Terbough 1986; Darnell and Bergstrom 2002). The birds communicate to each other by calling when there is a located food source (Beauchamp 2002). The birds would perch on the bunch of the fruits and using its beak, it peel off the hard scales of the fruit coat exposing the pulp to be eaten. They are unlike most psittacids who are seed predators but partially eat the fruit therefore leaving the endocarp untouched (Darnell and Bergstrom 2002; Janzen 1981; Kristosh and Marcondes-Machado 2001). Sometimes with manipulation, using its feet it would remove the fruit from the bunch and again eating the pulp and would drop the seed to the base of the palm. Some macaws would attempt to fly away with it, carrying it in its beak and may accidentally drop it between two palms. The dropping of the seeds and the feeding behaviour so as not to damage the seed makes these macaws and other psittacids seed dispersal agents. The red-bellied macaw would commonly switch between trees and tend to be agnostic toward other birds leading to removal of one of the birds to a bunch on another tree. They also exhibited sentinel behaviour during the intense transit of macaws during foraging (Villalobos and Araújo 2012).

**PREDATION.** Contact calls are exhibited generally in the family of which the red-bellied macaw belongs to, Psittacinae as an antipredatory behaviour (Breedveld and Duchateaux 2007). Contact calls are vocal connections (vocalizations) between individual members of the group used in creating group cohesion (Bradbury 2004). Group cohesion uses the theory that if they stick together in a group, the risk of predation decreases (Bradbury 2004; Breedveld and Duchateaux 2007; Robert 1996). The red-bellied macaw has a high call frequency of average fifteen calls per minute. There is a higher call frequency when flying than when perched (Breedveld and Duchateaux 2007). During flight the group cohesion is affected by their visibility increasing vulnerability to predator detection. High speed, high directionality and tight flight flock coordination are favoured when there is high visibility (Bradbury 2004; Breedveld and Duchateaux 2007). Individual birds call less as the group size increases which acts in balancing group cohesion and decreasing excessive calling. This would decrease the amount of energy loss and detection from predators. Individual predation risks by detection are decreased. Together as a group calling is an evasive strategy that causes confusion of the predator (Bradbury 2004; Breedveld and Duchateaux 2007; Robert 1996). Visual communication is increased in a bigger group as the birds are able to see each other. Given their feather colouration when perched they can fuse into the environment which acts as another antipredatory strategy (Breedveld and Duchateaux 2007).

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**Author: Stefan Rampersad**

**Posted online: 2012**



**Fig. 2.** Red-bellied macaws nesting in dead palm.

[<http://www.oiseaux-birds.com/card-red-bellied-macaw.html>, downloaded 6 December 2012]



**Fig. 3.** Red-bellied macaw eating palm fruits.

[<http://trinibirding.com/wetland.php>, downloaded 6 December 2012]