

The fate of the world's most majestic macaw

(The text of the article by David Waugh, Correspondent of the Loro Parque Fundación, published in Cage & Aviary Birds – Issue 6206 – March 22 2022)

One flagship species that has been most obviously affected by the huge-scale wildfires caused recently by climate change is the peerless hyacinth macaw. Here David Waugh reports on efforts to monitor this fabulous bird since fire devastated much of its home in the Pantanal, Brazil, two years ago.

Even with the coronavirus pandemic underway, the world's attention in 2020 was drawn to the gigantic wildfires that raced through the Pantanal wetlands of Brazil. The fires burned between January and November of that year, by some estimates affecting 120,000 square kilometres and killing almost 17 million vertebrate animals. Those most impacted were smaller vertebrates, including small lizards, birds and rodents, and the damage to the functionality of the wetland ecosystem has been severe.

Thus, it is to be expected that the key Pantanal population – 77 per cent of the total population of the species – of the largest (longest) of the world's psittacines, the hyacinth macaw (*Anodorhynchus hyacinthinus*), would be negatively affected. The fires simply added to the other known threats of habitat loss, illegal trade and localised hunting for food and feathers. Those threats combine to make this magnificent macaw vulnerable to extinction.

No wonder 2020 was an especially anxious year for Dr. Neiva Guedes, director of the Hyacinth Macaw Institute (Instituto Arara-Azul; IAA) and her team. They had to assess the effects of the fires on the hyacinth macaws over a huge area, and take whatever emergency measures possible to try to mitigate the worst consequences, especially at the most important sites for the species. Despite the stubborn persistence of the pandemic, the IAA team showed great dedication to the task of monitoring hyacinth macaws in the Pantanal throughout 2020 and 2021, supported by the Loro Parque Fundación and other partner donors.

The IAA team has reported its monitoring in 2021 of the largest refuge of hyacinth macaws in the Pantanal, the São Francisco do Perigara farm (Guedes et al, 2021). There, the field biologists have been monitoring the population size, as well as natural and artificial nests, and assessing biodiversity, thereby completing a cycle of one year after the fires hit the farm in August 2020. Using recognised counting methods, in December 2020 and February, June and September of 2021, respectively 806, 319, 518 and 409 (only 55 per cent of the September 2020 number) hyacinth macaws were recorded in the area of São Francisco do Perigara farm.

Since the fires the macaws have not used two traditional roosting sites on the farm. Other indicator species of environmental quality, green-winged (*Ara chloropterus*) and golden-collared macaws (*Primolius auricollis*) were also counted, the September 2021 total for former species being 12 and for the latter species 52. These totals were virtually the same as the counts in 2020, but a reduction in sightings in the months immediately after the fires was probably due to food shortages. Macaws have been feeding on fruits of acuri palms (*Attalea phalerata*) and bocaiúva palms (*Acrocomia aculeata*), either taken directly from bunches hanging from the trees or collected from the ground, especially in cattle pastures,

Cavity census

Nest-monitoring is an important activity used by the IAA to verify the dynamics of cavity occupation by macaws and other species, in addition to guiding management actions and recovery of natural and artificial nests. In September 2021, in São Francisco do Perigara farm, 37 nests (20 natural, including one with two entrances and 17 artificial) and five more unregistered cavities were monitored. Five nests (three natural and two artificial) were occupied by hyacinth macaws. There was evidence of macaws in 34 per cent of cavities and other species occupied 32 per cent of cavities, with proportionately more in artificial nests, mainly birds of prey (owls and falcons). Bats occupied some nests, as did native bees (*Trigona* spp.) and introduced honey bees (*Apis mellifera*) which, once established, normally exclude other potential occupants.

At other locations in the Pantanal, the field team has observed an increase in the occupation of cavities by honey bees in places that have experienced environmental disturbances. The biologists predict that, due to the large-scale fires, the same effect is likely in the medium and long term in São Francisco do Perigara farm.

Monitoring with camera traps occurred at nests and also at eight established localities in the habitat. The sum of all cameras in operation totalled 4,368 hours from June to September 2021. Camera problems were virtually absent, although at one of the nests the hyacinth macaws damaged the camera, which should not come as a surprise!

With 312 species recorded on São Francisco do Perigara farm over the long term, the avian diversity is higher. The cumulative total recorded over the year from September 2020 was 215 species, and no fewer than 65 bird species were identified by the camera traps. In September 2021 nine species of parrot were recorded. In addition to the three already mentioned were white-eyed parakeet (*Psittacara leucophthalmus*), yellow-chevroned parakeet (*Brotogeris chiriri*), peach-fronted parakeet (*Eupsittula aurea*), scaly-headed parrot (*Pionus maximiliani*), orange-winged Amazon (*Amazona amazonica*) and turquoise-fronted Amazon (*A. aestiva*). Over the same year-long period 25 species of medium and large mammals were identified, including the top predators jaguar (*Panthera onca*) and puma (*Puma concolor*).

Many mammals were badly affected by the advance of the fires, so it is very positive that the number of species is practically double in September 2021 than in the same month in 2020. Likewise, the flora is recovering well.

The need for nest-sites

The recovery of the hyacinth macaws appears to be taking longer. It is still too early to state all the effects of fires on macaws in the medium and long term, but it is clear that one of the main consequences of the destruction caused by the fires is the loss of natural cavities. The loss will probably increase as the storms that occur during the change of seasons topple even more trees compromised by fire. Therefore, the installation of artificial nests over the last few months is proving to be very important for macaws and other fauna.

Preparations have been made to be ready for future fires of this magnitude. Training and firefighting equipment have been reinforced, and over the entire farm existing water tanks have been restored and new ones added, and new firebreaks have been opened to add to the existing ones.

As if the impact of wildfires was not enough, Neiva has also recently (Vicente and Guedes, 2021) reported an additional threat to the hyacinth macaws, first identified in 2014. In that year a landowner in the Pantanal found three hyacinth macaws, one recently dead and two still alive with neurological symptoms, but which died soon afterwards. Biological samples were collected and toxicological tests revealed a level of organophosphate pesticide more than sufficient to cause acute death.

Free-ranging wildlife is constantly exposed to pesticides, but most of the effects on wild fauna are not observed because it is rare to find dead small animals. That applies especially in the Pantanal, where carcasses are quickly found and dismembered by scavengers. Organophosphates can reside in the environment for at least three years, and the reckless use of pesticides can potentially have longer-term effects. If hyacinth macaws are carrying sub-lethal levels of pesticides, there could be negative effects, for example on their reproduction. Evidently, pesticide use needs monitoring, and the main recommendation is that no organophosphate should be applied. In or adjacent to wildlife reserves, and with firm control in aquatic ecosystems such as the Pantanal.

References:

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