

Causes affecting the Survival of Birds of Prey in Nicaragua

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Nicaragua is situated in the centre of South America, between the republic of Honduras in the north and Costa Rica in the south. Covering an area of 130,000 km², and with a population numbering about 3 million, it has 620 species of birds which include 4 Carthartidae, 35 Accipitridae, 10 Falconidae, 1 Tytonidae and 11 Strigidae.

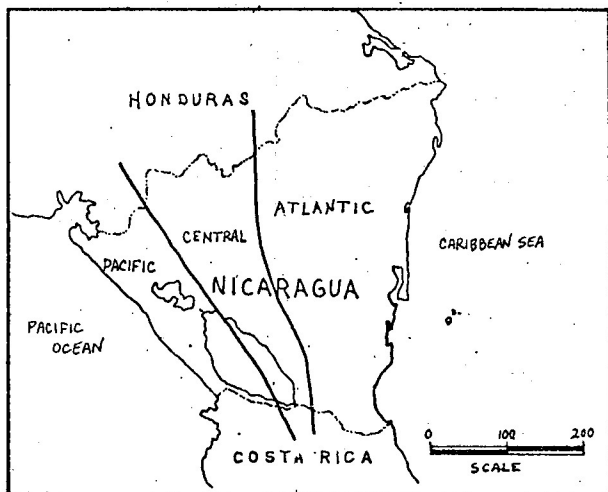
Geographically, the country is divided into three regions with different ecological and demographic characteristics, and this division has to be taken into account when seeking to understand how the causes affecting the survival of birds of prey in Nicaragua come into play in each case, (Fig 1).

The Pacific Region, the driest and most deforested, was originally covered by tropical dry forests, but in the present times cultivated fields and pastureland predominate. Divided from this region by the Great Lakes (Nicaragua and Managua) is the Central Region, which includes to the north the principal mountain chains, rising to heights of over 2,000m. The north-western sector is covered by pine and oak forests, whilst in most of the higher mountains cloud forest occurs in scattered distribution up to a level of 800m. Further south, the land becomes less rugged and pastureland predominates. The Atlantic Region, the most extensive, is covered in large part by tropical rain forest; it is sparsely populated and throughout its length forms the frontier of agricultural activity.

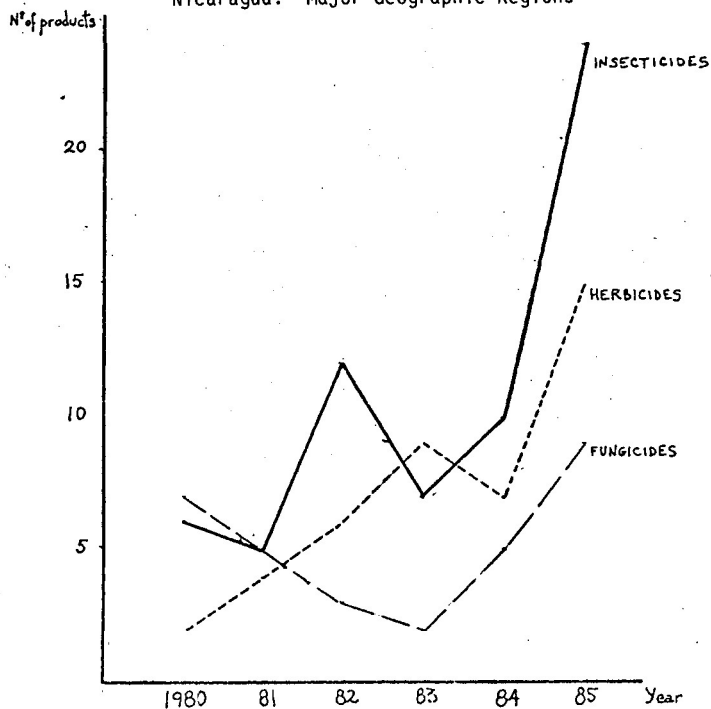
DEFORESTATION

Deforestation - the main problem of tropical forest - has different characteristics in the different regions of Nicaragua. In the Atlantic region, as a result of the war, the density of the population has diminished drastically and the inhabitants have been concentrated into small villages, settlements and co-operatives alongside the few roads which traverse this jungle region, so that deforestation affects mainly these sectors. The advance of the agricultural frontier has been halted throughout its length and in some areas, such as the proposed biosphere reserve of Bosawás, it has receded. Without doubt, in the Atlantic Region, Nicaragua currently possesses the largest and best conserved areas of humid tropical forest in all Central America, in which it is possible to find the major raptor species such as Harpia harpyja and Spizaetus ornatus.

Following the victory of the Revolution in 1979, all concessions to foreign lumber companies were annulled. At that time, national or mixed companies in the region had to cease operating because of the war, both in the deciduous forests and in the pine forests in the north. As a result,



Nicaragua: Major Geographic Regions



Diversity of chemical products used for agriculture in Nicaragua (1980/85)

the raptor habitats in these areas remain well preserved, and the same can be said for the mangroves bordering the Caribbean coast.

However, in the Central Region deforestation has continued. Among the major reasons for this is the loss of soil fertility on the steeper slopes combined with the current concentration of the population in certain sectors; this has encouraged the deforestation of large tracts of forest, using any available route of access.

A recently approved forestry project aims to extract as much resin as possible from the pine forests of the north-central region, using a method of extraction which causes the death of the trees after four years. This type of project, carried out by state enterprise with strong financial backing, can seriously affect the maintenance of the habitat for species dependent on these pine forests in Nicaragua, such as Buteo jamaicensis and Otus trichopsis.

At the present time the Pacific Region is suffering considerable pressure on the forested areas, both from the immigrant population and state enterprises, as they see in the dry forests of this area the only source of wood available at present. The Agrarian Reform has converted part of the large farms into smaller units or state enterprises; in either case significant changes are incurred in the means of production, normally involving deforestation of marginal land and extensive and uncontrolled use of a wide variety of pesticides.

POLLUTION

Although the use of pesticides is widespread throughout the country, their high cost ensures their concentration on the intensive crops of the Pacific Region, particularly such export crops as cotton and sugar cane.

In spite of the fact that the total area of cotton plantations has significantly declined in the last decade, from 231,000ha in 1976 to 130,000ha in 1985, the diversity of insecticides, herbicides and other agrochemicals has increased dramatically (Fig. 2). It remains to be proved whether there also has been an increase in the quantities used of these products. To date, we have found three raptor species (Gampsonyx swainsonii, Buteo magnirostris and Falco sparverius) with symptoms of poisoning in the cotton plantations.

Since 1983 the importation of DDT has been halted, but other insecticides prohibited in the USA, such as Temik and Abate, continue to be used in Nicaragua. Recently, massive aerial fumigations of the city of Managua were made with the latter product in order to control a plague of the mosquito Aedes aegypti. On the following day, numerous insectivorous birds were found dead or dying in the area surrounding the Central American University, although it should be pointed out that none of them were raptors.

In addition to contamination by pesticides carried in surface drainage, some pilots also have the habit of regularly washing out the tanks of their spray-planes flying over the surface waters of Lakes Managua and Nicaragua. Fish-eating species such as Pandion haliaetus and

Buteogallus urubitinga may be affected by eating contaminated fish, although this needs to be confirmed by relevant data.

THE EFFECT OF WAR ON THE RAPTOR ENVIRONMENT

Since the beginning of 1982, war in Nicaragua has had significant repercussions on the environment. Whereas the direct effects are insignificant, the indirect ones are rather diverse in character. The most important is the demographic shift which has led to massive deforestation in the Pacific Region and part of the Central Region on the one hand, and to recuperation of the evergreen and pine forests of the Atlantic Region on the other. Another important effect has its cause in the areas used for firing practice; the fires started by tracer bullets spread very rapidly in the tropical dry forests of the Pacific Region, where most of the firing ranges are situated. There is documentation in this respect, as regards the Masaya Volcano National Park and the Chiltepe Peninsula; in the latter area a much weakened Buteo brachyurus and two Buteo magnirostris were found perched on burnt-out stumps in an extensive area of open dry forest completely destroyed by fire.

Due to the strategic importance of the highest mountains in the Pacific and Central regions, military bases have been constructed on some of their summits. The negative effect of these on the raptors is less due to the impact of the infrastructure itself than to the presence of armed soldiers who often use these birds for target practice, and to the building of roads along which the fuel gatherers cut wood and peasants gain access in search of fresh land.

LEGAL PROTECTION OF RAPTORS IN NICARAGUA

The legislation on this subject is extremely sparse and ambiguous. In 1958 some vertebrate species were given legal protection for two years. In this decree we found only one raptor, the Barn Owl Tyto alba. In 1972 another, similar decree extended protection of the Barn Owl and added a further species, the King Vulture Sarcoromphus papa. A decree of 1983, currently in force, protects eagles, kites, hawks and the King Vulture against hunting, but the Barn Owl is no longer mentioned, although in my opinion this does not represent a change in the official attitude towards this species. In spite of this legal protection none of these decrees has had any influence on the conservation of either birds of prey as such, or of their habitat; indeed the authorities who should be responsible for their application appear to be unaware of them.

The archives of the Regulation and Control Department of the Nicaraguan Institute of Natural Resources and the Environment (IRENA) reveal that its inspections have never confiscated any stuffed birds or living specimens; nor have they fined any transgressors of this law as it relates to raptors. Indeed, it is interesting to note that in at least four IRENA offices stuffed birds of prey by known taxidermists are to be found: these are Bubo virginianus, Elanus caeruleus and Buteo magnirostris.

HUNTING OF RAPTORS FOR SPORT AND COMMERCE

In Nicaragua the cost of 22-bore cartridges is so high and permission to carry a shotgun and hunt with it is so restricted that the impact on these non-cynegetic species is minimal. Probably more birds of prey are killed by military weapons than by rifle or shotgun, since it is easier for a farmer to obtain ammunition for the former than for conventional sporting weapons.

Commercial hunting is practically limited to the activity of two taxidermists who live in the country. As a general rule, the value of a stuffed raptor depends more on the skill of the taxidermist than on the actual species. In all cases this value ranges between US\$ 4.00 and US\$ 7.00, depending on the size of the bird.

PUBLIC ATTITUDES TOWARDS RAPTORS

In general, raptors arouse little interest in the majority of Nicaraguans. As in many other countries, almost any species of hawk, kite, eagle or falcon is accused of stealing and killing poultry, whilst owls also foretell bad luck or imminent death.

There is a popular saying that "one shouldn't waste bullets on vultures", meaning that it is useless to waste time and energy on worthless objects or persons. This provides an idea of the value placed on vultures among the people of Nicaragua.

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