

## XI IRSA Congress

### Working Group 25 : The “ecologisation” of agriculture in the North and in the South

#### Biodiversity and social justice in New Caledonia. A case study

##### Introduction

This report is about biodiversity in New Caledonia. It is not based on field-work but on the reading of several documents that I have found in beginning what is a new research program for me. So what I will present here are not research results but only first and basic hypothesis.

New Caledonia is a small French overseas territory located in the Pacific Ocean, between Australia and Vanuatu. Until the end of the eighties, the post-colonial history of this French territory was particularly violent and the independentists kanakas movements very strong. Those two points are important to understand why the notion of development was and still is so important in New Caledonia. In 1988, a very important political agreement, called "Les Accords de Matignon" (Matignon's agreement), was signed between the French government and the local political movements. With this agreement social stability and civil peace come back in the territory. It has divided it in three Provinces : South, North and Loyalty Islands provinces. The two last ones, the Northern Province and the Loyalty Islands Province are mostly occupied by Kanakas (Melanesians) and are considered as under-developed. And the southern Province is mostly occupied by Europeans and considered as the most developed part of New Caledonia with the big city of Noumea (130 000 inhabitants for a total of 230 000 in all New Caledonia, 196 000 at the 1996 survey).

One of the main goal of the Matignon's agreement was to promote the economic development in the Northern and in the Loyalty Islands Province. The important notion of this agreement is called the "**re-equilibrage**" (that means to balance) between the three provinces in order to keep political stability and to avoid new social troubles. We can consider that, in other words, what was at stake since 1988, and during the nineties, was **social justice**.

This aim of re-equilibrage between the three provinces was confirmed and maintained by a new political agreement, called the Nouméa agreement, which was signed in 1998. The re-equilibrage is seen as one condition for social and political stability. In this way, an important mining project is in preparation in the northern province.

But, in the same time, New Caledonia is considered as one of the world's most interesting and exciting areas for botanists and more generally for naturalists. **Its biodiversity** is more and more internationally well studied and well known and considered as very remarkable for several reasons :

- the island's flora is exceptionally rich for an area its size.
- Levels of specific and generic endemism are among the highest in the world.

- The flora contains numerous relict representatives of the late Cretaceous – Secondary Period, -140 millions/65 millions.
- New Caledonia is mentioned as one of the **25 hotspot of biodiversity** in the world ;
- It is also one of the world's few **megadiverse country**. The megadiversity country concept was developed in 1988 by Mittermeier. "It recognises that a very small number of countries, lying mostly in the tropics, account for a very high percentage of the world's biodiversity"<sup>1</sup>.
- And it figures four times in the 238 **Ecoregions** identified by the WWF, this powerful International NGOs for nature conservation, in its Global 200. The four new caledonian Ecoregions identified by the WWF are : 166 New caledonia **Rivers and streams** ; 18 NC **Moist Forests** ; 221 **Barrier Reef** ; 53 NC **Dry forests**. The **WWF** "has conducted an analysis of ecoregions representing the Earth's 30 terrestrial, freshwater, and marine major habitat types. Based on a comparative global analysis and synthesis of five extensive regional studies, they identified **238 ecoregions as priority targets for conservation action** because they harbor the most outstanding and representative examples of the world's diverse ecosystems. It is called **the Global 200**<sup>2</sup>. Selection of ecoregions was based on analyses of species richness, species endemism, and so on".

As you can see New Caledonia is in the focus of international natural sciences and nature conservation program.

So it seems that three different and in some ways contradictory processes are co-existing today in New Caledonia :

- one which promote the re-equilibrage, that means economical development of northern and loyalty islands province. This process seems to be hold by local and French policies and administration (province...), and by some multinationals (Falconbridge, and so on).
- one which promotes the conservation of the remarkable biodiversity of the territory : this one seems to be hold by American and French scientific institutes (IRD, Missouri Botanical Garden...), by international NGOs (WWF, UICN...), and by local association of nature conservation, etc. It seems that civil society is leader in this process and that neither local nor French politics were until recently very concerned by this topic.
- And a third one which tries to ecologise economical activities such as agriculture and mines. We can consider that this process is what we call sustainable development.

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<sup>1</sup> Giraud-Kinley, C., 1997, Preserving Megadiversity : the case of New Caledonia, in Asian pacific Journal of Environmental Law, vol 2, Issues 3 and 4 : 277-92.

<sup>2</sup> **THE GLOBAL 200: A REPRESENTATION APPROACH TO CONSERVING THE EARTH'S DISTINCTIVE ECOREGIONS**, October 2000, David M. Olson, Eric Dinerstein, Robin Abell, Tom Allnutt, Christopher Carpenter, Loren McClenachan, Jennifer D'Amico, Patrick Hurley, Ken Kassem, Holly Strand, Meseret Taye, and Michele Thieme, Conservation Science Program, World Wildlife Fund-US, 1250 24th Street, NW, Washington, DC, 20037 USA, E-mail: david.olson@wwfus.org / eric.dinerstein@wwfus.org

In this paper I will focus on the second and third process. I will first asking myself how, why and when **New Caledonia biodiversity became so important from the point of view of several actors**. And in the second part, I will briefly present an important and recent conservation program of the dry forests, held by the WWF.

## 1. A brief history of natural sciences about New Caledonia

### The concept of hotspot

In 1988, an important scientific publication is written by a well known british botanist called Norman Myers. In this article, Norman Myers defined what will become the very successful concept of **hotspot of biodiversity**. The aim of such a concept was to give some answers to the conservationists who were in front of a very difficult dilemma : which territories, which countries, which regions in the world are the most important to conserve the species ?

Two factors are considered for hotspot designation. Hotspots are :

- regions that harbor a **great diversity of endemic species and, at the same time,**
- **have been significantly impacted and altered by human activities**<sup>3</sup>.

**[Plant diversity is the biological basis for hotspot designation; to qualify as a hotspot, a region must support 1,500 endemic plant species, 0.5 percent of the global total. Existing primary vegetation is the basis for assessing human impact in a region; to qualify as a hotspot, a region must have lost more than 70 percent of its original habitat. Plants have been used as qualifiers because they are the basis for diversity in other taxonomic groups and are well-known to researchers. Typically, the diversity of endemic vertebrates in hotspot regions is also extraordinarily high. Earth's biologically richest places, the biodiversity hotspots claim especially high numbers of endemic species, yet their combined area covers less than 2 percent of the Earth's land surface. Each hotspot faces extreme threats, and has already lost at least 70 percent of its original natural vegetation.**

The hotspot concept targets regions where the threat is greatest to the greatest number of species and allows conservationists to focus cost-effective efforts there. **The 25 biodiversity hotspots contain 44 percent of all plant species and 35 percent of all terrestrial vertebrate species in only 1.4 percent of the planet's land area.]**

"New Caledonia is characterised by a particularly high rate of endemic species, specially within its flora. More than 3000 endemic species of plants have been identified on the island. This is known to be a unique adaptation to "toxic" soil , due to high mineral content such as nickel and copper"<sup>4</sup>.

To understand how and why New Caledonia has become one of the 25 hotspot of biodiversity we need to take a briefly historical perspective.

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<sup>3</sup> <http://www.biodiversityhotspots.org/xp/Hotspots/hotspotsScience/>

<sup>4</sup> Giraud-Kinley, C., 1997, Preserving Megadiversity : the case of New Caledonia, in Asian pacific Journal of Environmental Law, vol 2, Issues 3 and 4 : 277-92.

## Historical perspective of natural sciences in New Caledonia

As you probably know, in the XVIIIth century, scientists (botanists, zoologist, geologist, geographers, and so on) were travelling all over the world with an important mission : to discover, from the European point of view, the nature of all the continents, to describe and to study it.

It is precisely during one of such a discovery travel, the one James Cook did between 1772 and 1775 (seventeen seventy two and seventeen seventy five), that he discovered in september 1774 (seventeen seventy four) New Caledonia. And it is since this period that New Caledonia biodiversity begins to be studied by European scientists. Three german naturalists, George Forster, his father Johann Reinhold, and Anders Spaarman were on board. When they returned in Europe, they published some texts in which they described the New Caledonian nature (flora, animals...). George Forster has left very good descriptions and drawings of flora and animals of New Caledonia. And his father Johann Reinhold, published in 1778 scientific observations which were important at this time.

Those scientific publications began to catch the attention of the scientific community on New Caledonia's biodiversity. According to a contemporary American ecologist called Peter Lowry, compared with most of the tropical regions, the flora of New Caledonia is well known and well documented since a long time. I quote Peter Lowry<sup>5</sup> :

"New Caledonia received much attention from plant collectors, starting with the Forsters, who accompanied Capt. Cook on the first European expedition to visit the island, and continuing throughout much of the 20th century<sup>6</sup>. The origin, evolution, and biogeographic history of New Caledonia's native plants and vegetation have been the subject of many publications during the last 125 years"<sup>7</sup>.

But most of the intensive botanical exploration of New Caledonia has been conducted since the mid of the fifties (1950). In 1946, the Institut Français d'Océanie (French Institute of Oceania) was created in Noumea. In 1964, it became ORSTOM (Office de Recherche Scientifique et Technique Outre-mer ) and in 1998 IRD (Institut de Recherche sur le Développement)

With the implantation of the IFO, began new scientific activities : ecological inventories on flora, and medicinal plants will lead to the creation of the herbarium of New Caledonia in 1963.

Hugh McKee, who is a well known american ecologist, collected about 45,000 numbers between the 1960s and his death in 1995. Other important modern field botanists include Jean-Marie Veillon, Tanguy Jaffré and Philippe Morat of ORSTOM in Nouméa, and [Gordon McPherson](#) of the Missouri Botanical Garden.

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<sup>5</sup> P. Lowry, DIVERSITY, ENDEMISM, AND EXTINCTION IN THE FLORA AND VEGETATION OF NEW CALEDONIA, <http://www.mobot.org/MOBOT/research/newcaledonia/intro.html>, first text, 1996.

<sup>6</sup> cf. H. S. MacKee, 1964; M. E. MacKee, 1972; Morat, 1993, 1995.

<sup>7</sup> Balansa, 1873; Brousemiche, 1884; Schlechter, 1905; Sarasin, 1917; Guillaumin, 1921, 1924, 1928, 1934, 1948, 1953a, b, 1954, 1964; Däniker, 1929, 1931, 1939; Good, 1955; Baumann-Bodenheim, 1956, 1988, 1989a, b, c, 1990; Viro, 1956; Balgooy 1960, 1971; Thorne, 1963, 1965, 1969; Raven and Axelrod, 1972, 1974; Jaffré, 1974, 1980, 1993, 1995; Holloway, 1979; Raven, 1980; Morat et al., 1981, 1984, 1986; Jaffré et al., 1987, 1993; Schmid, 1987; Lowry, 1991; Jaffré and Veillon, 1991, 1995; Morat, 1993; Bouchet et al., 1995.

I do not know if New Caledonia became a hotspot of biodiversity thanks to the publication of Norman Myers in 1988 or if it has happened by another process. I could not find any precise information about it. Anyway, it would not have been possible to qualify New Caledonia as a hotspot without having produced all this scientific knowledge on its biodiversity through Flora, Herbarium, publications, etc., since a long time.

Of course it raises many important questions such as : how can we measure biodiversity, question which is source of great controversies inside natural sciences and scientific ecology.

### **The conservation of tropical dry forest : the intervention of the powerful nature conservation NGOs (lobby ?)**

Among all New Caledonian remarkable ecosystems, one is considered as particularly in danger : it is the tropical dry forests (sclerophyll forests).

"Tropical dry forest is the most endangered of the New Caledonian vegetation types, say Gillespie and T. Jaffré because it has been reduced to less than 2% of its original extent in New Caledonia due to land clearance, cattle ranching and fire"<sup>8</sup>. And tropical dry forest is one of the world's most endangered forest types.

In **1981**, some botanists (Ph. Morat, T. Jaffré, J. M. Veillon, A. S. Mac Kee) gave the name of sclerophyll forests to those specific vegetal formations.

In **1990**, the first systematic study of dry forests is made by ORSTOM as an answer to the southern Province : cartography, edaphic conditions, inventories of flora, etc.

In **1994**, a scientific report is published by ORSTOM : "Biodiversity and conservation in New Caledonia". In this report the whole dry forest problematic is studied.

The same year, the southern Province concluded a conservation agreement with a farmer (Claude Metzdorf) in order to protect his dry forests.

"New Caledonian authorities negotiated, say Catherine Giraud-Kinley, a type of model conservation agreement with landowners, with the view to protect the dry forests. On 12 July 1994, a convention was concluded between the authorities of the Southern Province and Mr Metzdorf, **a farmer** in the northern district of Poya Sud. The agreement concerns an area of eight hectares of sclerophyll forest located on Mr Metzdorf's property. The agreement's main component is to grant the sum of 1.200.000 francs to the farmer, for him to build a fence around the boundaries of the protected site. It may hence be considered that the payment corresponds to a reimbursement for the service provided by the farmer, rather than a compensation for the loss in value of the site for example. Mr Metzdorf is required to build the fence within a period of 12 months following the conclusion of the agreement. The stated purpose of the fencing is to prevent the grazing of animals in the protected areas. The fencing of the site is to be maintained for a period of ten years by the farmer".

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<sup>8</sup> Tropical dry forests in New Caledonia, Thomas W. Gillespie, Tanguy Jaffré, 2003, Biodiversity and Conservation 12 : 1687-97.

I did not find more precision concerning those agreements. The content of it reveals an old conception of nature conservation in which human activities are totally excluded from the territory to be protected and conserved. The fence around the dry forest draw two different areas :

- one in which the farmer can continue his agricultural activities, without changing them in anything ;
- one which excludes all human activities and which try to preserve this area from all impacts which are systematically considered as noxious and disturbing.

As Marie Noelle told us yesterday, with those kinds of conservation agreements, naturalists have created a nature conservation disconnected from agriculture realities, preventing knowledge hybridisation<sup>9</sup>. So can we consider that it is the first step towards an ecologisation of the farmer's exploitation ?

In **1995**, an another **scientific publication** by Bouchet and al.<sup>10</sup> made an **urgent call for immediate action** towards the conservation of dry forests.

Thanks to those scientific publications, herbarium, flora and call for action and in the context of the Eco-regional strategy Global 200 of the WWF, in **1997**, the scientific director of the WWF France with two american conservationists experts of the WWF-US came in New Caledonia to propose to local partnerships a conservation program of the endangered dry forests. With the financial aid of German and American co-operation, the WWF-France in partnership with all scientific and institutional New Caledonia's actors, begin then to elaborate an important conservation program of the dry forest in New Caledonia.

In **1999**, three new areas are protected with fences all around.

In **2001**, the conservation program is signed for 5 years.

The contents of this program shows an evolution in the conception of nature conservation : it recognises the importance of "agronomization" of the conservation process in order to make it sustainable. In a scientific WWF report written in 2000, the author wrote :

"It is important to consider the conservation of dry forests in a global way which is integrated in agricultural and breeding activities".

But the author also considered that they have to educate the landowners, the farmers and the whole population to the environment, in order to make them understand the crucial importance of conserving dry forest and biodiversity. Education and information towards the public play a great role in this program, showing that they share a scientist conception : it is because of the ignorance of people that dry forest and biodiversity are in danger. If they educate people with scientific knowledge then they will understand the importance of biodiversity and modify their practices.

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<sup>9</sup> Marie Noelle Anfrue, 2004, Ecologisation of agriculture or "agronomisation" of nature conservation ?, in IRSA XI World Congress, Trondheim, Norway, July

<sup>10</sup> Bouchet, P., Jaffré, T., Veillon, J. M., 1995, Plant extinction in New Caledonia : protection of sclerophyll forests urgently needed, Biodiversity Conservation 4 : 415-28.

But what is probably the most surprising in this conservation program is that many of the territories concerned are owned by rich white farmers like Claude Metzdorf. In the particular socio-political context of New Caledonia where the main goal was and still remains the re-equilibrage between Melanesians and European province, it is interesting that an important conservation program is located on such white territories.

We can then wondering what else is conserved with dry forest and biodiversity : only nature or also social relationships of domination and exploitation ? For the scientific and institutional actors involved in such a conservation program, the questions of re-equilibrage and of social justice are not their problems and their questions. They are concerned with others topics and goals. So we can ask the following questions :

- when people are talking about nature preservation, conservation of biodiversity and so on, what else is conserved and protected ? And what else is changed ? In what way do conservation of biodiversity leads or not to some change in local societies concerned ?
- where is the social justice in this specific program on conservation of tropical dry forest in New Caledonia and more generally where is social justice today in New Caledonia ?
- And even more generally where is social justice in the environmental policies and in sustainable development ?