Madame Aimée Antoinette Camus: One of the Last Great Amateurs

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ABSTRACT

Aimée Antoinette Camus was born in Paris in 1879 and, after 86 years of what can only be described as an extraordinarily productive life, died there in 1965. She left Paris only a few times in her life, but through her work at the Muséum national d'Histoire naturelle, received countless hundreds of specimens from all over the world. Little is known of the personal life of this woman of whom history has left us but one portrait. In the forty-two years between the publication of *Les Chênes, Monographie du Genre* Quercus and her first botanical contribution in 1894 at the age of fifteen, Aimée Camus published hundreds of scientific articles and authored or coauthored several major monographs. *Les Chênes* remains to this day unique in its comprehensiveness. This presentation attempts to paint a clearer and more colorful portrait of Madame Camus while presenting *Les Chênes* in a historical perspective.

Keywords: *Quercus, Les Chênes, Monographie du Genre* Quercus, Muséum national d'Histoire naturelle, botany and French imperialism, Edmond Gustave Camus

Preface

The story that is about to follow is a mix of detective work and scholarship. For sure, scholarship always involves a bit of detective work – but this case literally started as the search for a missing person. The detective work has been very rewarding and for the value of the scholarship, it is for the reader to decide.

Three years ago, at the 6th International Oak Society Conference in Mexico, friend and fine oak artist Keiko Tokunaga and I were looking for *Q. eugeniifolia* Liebm. – today the Mexican plant that has been referred to under this name is called *Q. delgadoana* S. Valencia, Nixon & Kelly – somewhere near Real de Monte in the state of Hidalgo, when Keiko said to me "Béatrice, did you know that nobody knows who Madame Camus' mother was?" I admitted that, no, I did not know this and continued looking for *Q. eugeniifolia*. I admit also not having given any thought at all to the question until the idea of presenting a paper on Madame Camus at the 7th International Oak Society Conference in France came up. Thus the detective story starts with the search for Madame Camus *mère* and led to Madame Mercedes Falgarona, the widow of the man who inherited a large part of the Camus estate when Blanche, Aimée's younger sister, died in 1968. Madame Falgarona welcomed me to her home and shared with me the documents, photographs and paintings in her possession.

Introduction

Many of the readers of this journal will be surprised to learn that Madame Camus was not, in her time, especially known as Madame Oak. In the few primary sources of biographical information that can be found, more mention is made of her work with grasses and orchids – or at the very least, *Les Chênes*, for the monumental amount of work that it is, is never singled out by these authors as having been more important to her.[1] Her published work covers an incredible number of plant families and genera: *Salix*, *Cupressus*, *Carpinus*, *Castanopsis*, *Castanea*, *Lithocarpus*, *Quercus*, bamboos and other grasses, orchids, etc. In addition to her major work in systematics, Aimée Camus authored works of popular science, on the history of science (in particular, work on eighteenth and early nineteenth century French specialists on the grasses of North America)[2] and was heavily involved in many studies attempting to determine the economic value of indigenous plants arriving by the ton from the new French colonies (especially Madagascar and Indochina).

But who was she? Where was she born? Where did she study? What was her working relationship with the Muséum national d'Histoire naturelle? What did she think about taxonomy and natural history and the struggles of the Muséum to stay alive as a functioning scientific institution during the end of the 19th century and the first half of the 20th? Were these things discussed in what were in her time the very crowded hallways and overcrowded laboratories of number 10, rue de Buffon* where other workers were frenetically doing the same thing that she was, i.e., classifying the literally dozens of thousands of specimens arriving at the Muséum from the new French Empire?

So who was she? And, first of all, who was her mother?

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* The Muséum national d'Histoire naturel is composed of different institutions, one of which is the Jardin des Plantes, in Paris. It forms a sort of lopsided rectangle bordered by rue de Buffon, rue Geoffroy St. Hilaire, rue Cuvier and quai St. Bernard. The herbarium and other botanical facilities are located in the building that can be accessed through 10, rue de Buffon.

1/ Aimée Antoinette Camus, painted by her sister Blanche.

The family

Her mother's name was Aimée Françoise Choinel, born on 19 May 1856 in the city of Paris in the 16th *arrondissement*.* [3] The Choinel family were wealthy, upper-class citizens whose ancestry dated back to Louis-Denis Choinel, who in 1759 held the title of Advisor to Louis XV and to the City.

Monsieur Camus *père* was born in 1852 on the 15th of August in Paris to a wealthy and influential family[4] (his father had been the Mayor of Champagne).[5] Monsieur Camus and Mlle Aimée Françoise Choinel were married in 1878 in Paris.[6]

Aimée Antoinette Camus was born at 183, rue du Faubourg St. Antoine in the 11th *arrondissement* of the city of Paris on the 1st of May in the year 1879 (and not, as Wikipedia has it, in the place called l'Isle Adam, 50 miles north of Paris).[7]

In 1884 (Aimée would have been five years old) her sister Blanche is born, at a different address: 58, boulevard St. Marcel in the 5th *arrondissement* and exactly 660 meters from the Jardin des Plantes and number 10, rue de Buffon.[8] From a note in the *Journal de Botanique*, we learn that the Camus were still living at 58, boulevard St. Marcel in 1888, when Aimée would have been 8 years old and in her fourth year of primary school.[9] In 1897, when her paternal grandmother dies, the family's home is still at 58, boulevard St. Marcel and she is 18 years old.[10] In 1915, when her father dies, the family had already moved to 48, rue de l'Abbé Groult.

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* An *arrondissement* is an administrative term used to delimit a specific part of, for example, a city. In common parlance, the different neighborhoods in Paris are referred to as the 11th, 7th, 5th, etc… *arrondissement.*

2/ Aimée Antoinette Camus, Blanche Célestine Camus, Aimée Françoise (Choinel) Camus.

It is very difficult to say anything about the personal life and thought of Aimée Camus. For one, Madame Falgarona was the second wife of Monsieur José Falgarona and only arrived at 199, rue Lecourbe after Aimée had died. More importantly, the botanic library – and all the other botanic facilities of the Muséum at the Jardin des Plantes – have been closed since 2008 and, as the head librarian told me, Madame Camus' correspondence, if it has been saved, has not been inventoried and so merely to find it would be quite the task

One of the two primary sources of information that we have from a person that knew her is Jacques Léandri's biographical notice. As all the secondary sources of information have repeated since, we learn there that Aimée Camus was devoted to her father and her sister. More intriguing though (but not repeated in any of the secondary sources), we learn specifically that Blanche was always ready to sacrifice her personal projects for the studies of her sister "a companion whose entire life had been marked by emotional trials."*[11] What were these emotional trials? I do not have an answer to this question except to say that they were probably not due to a broken heart: according to Madame Falgarona, her husband, who knew both sisters well, assured her that neither Blanche nor Aimée ever had a boyfriend, lover or husband.[12]

The other primary source of information that exists is Henri Lecomte's biographical notice on Aimée's father, Edmond Gustave Camus. Henri Lecomte knew and worked with them both and he too assures us that Aimée was indeed devoted to collaborating with her father and shared his love for botany.[13] "[S]hortly before his death he had undertaken, with Mlle A. Camus, a major study on grasses. His daughter – devoted and distinguished colleague – has not abandoned the task and she has presently undertaken its completion with her consummate experience and professional standards, that I should like to pay tribute to."[14]

Education in 19th century France

It was only in 1880, the year after she was born, that a law was passed creating institutions of secondary education for girls (age 11 to 18). The curriculum for girls was markedly different in that it was not constructed around what is referred to as the *humanités classiques*, which formed students in Latin and Greek (indispensable at the time

* Citations from French texts have been translated by the author.

for going on to university), and, more importantly, only boys had access to the last year of secondary education, the *baccalauréat* and its exams, also indispensable for going on to higher education. Girls took different exams in the year before the *baccalauréat* and, if successful, would have a diploma that would allow them, at best, to pursue training with a view to becoming a primary or secondary school teacher. "Latin is not for young ladies, they should only be taught the rudiments, the same is true of mathematics. Encouraging young ladies to embrace the exact sciences would unfortunately develop their powers of abstraction. In addition, applied mathematics is not for them."[15] The goal really was to form good mothers and wives, not professionals in competition with men.[16]

If you had wealthy and indulgent parents, they could pay for private lessons to cover all of the material that the boys studied during that year, and then the *baccalauréat* examination could be passed. This situation changes only in 1924 when girls' *lycées* are officially allowed to prepare their students for the *baccalauréat*.

Therefore, Aimée Antoinette Camus, at age 17 in 1897, would not have had official access to the year of study and examinations that she would have needed to continue her education at university level. She would have finished her secondary schooling with a year of botany taught by Madame Morot, wife of Louis Morot (1854-1915), Muséum botanist *(préparateur)* and founder of the *Journal de Botanique*.[17]

She would thus have had one year of botany classes with Madame Morot, at age 13 to 14. So what did she do? It is most probable that her family paid for private lessons, but fairly unlikely that she went on to formal higher education in pursuit of a degree. She was much too busy being a botanist…

3/ Blanche (left) and Aimée Camus.

Amateur and volunteer

I have not as yet been able to find any references to what Madame Morot taught in her botany classes; and, while this would certainly be interesting for historical reasons, it is in fact quite trivial in this story. Aimée Camus was fifteen – just one year after her year of botany with Madame Morot – when her first joint publication, with her father, appeared in the *Bulletin de la Société Botanique*.[18] At this meeting were present 124 men, 15 women and one fifteen-year-old botanist.[19]

According to Jacques Léandri, after studying with Madame Morot, Aimée took classes with Gaston Bonnier (1853-1922), Professor at the Faculté des Sciences of the Sorbonne but Léandri does not say that she attended the Sorbonne.[20] Also according to Léandri, she later studied with Philippe Van Tieghem (1839-1914), who taught classes at the Muséum an institution that was never mandated to deliver diplomas. Likewise, there is no mention of her higher education or of any ensuing titles she may have acquired (which is always the way similar biographical notices start). Further, Madame Camus, who "worked" full time at the Muséum from roughly 1908 until 1963, was never paid: she was a volunteer.[21;22] An amateur in, as we say, the noble sense of the word.

Jacques Léandri, in his homage to Aimée Camus, begins: "In our day, when both systematics and botany in the field, like so many other disciplines, are becoming the privilege of the staff of Scientific Institutions, where large cities push indigenous plant populations further and further away from city dwellers, we must not forget the "amateur" botanists, who throughout the century have served Science so well. They constituted the skeleton of the Société Botanique de France and many of them were indeed masters. Aimée Camus, one of the most remarkable of that group, has recently left us."[23]

Madame Camus may very well have obtained a diploma from an institution of higher learning but in actual fact, it didn't matter: she lived at a time when her competence was (almost) all she needed to be taken seriously.

To name but a few of her honors and awards: in 1906, the Prix de Coincy awarded by the French Science Academy to honor significant contributions to taxonomy; in 1958, the title of Associé du Muséum, a prestigious honor given only rarely; in 1961, le Prix du Conseil de la Société Botanique de France, and she was appointed Chevalier de la Légion d'Honneur for outstanding civil service – in systematics – to her country.

From a document in Madame Falgarona's possession (and dated somewhere between 1900 and 1903, we learn that Aimée, 21- to 23-years-old, receives a note from Monsieur Gaston Darboux, Permanent Secretary of the French Science Academy, Honorary Dean to the University of Paris Science Faculty, and President of the Friends of Science Assistance Society: "Please accept my warmest congratulations and hear my plea to not forget in this day those unhappy scholars and their families to whom the Friends of Science Assistance Society are devoted. Every day our needs are increasing without an equivalent rise in resources. Support from all of us is needed; yours would be particularly precious."

What honor had she received, what achievement had she accomplished at such a young age to merit the "warmest congratulations" of such an important French figure of science as was Gaston Darboux? What was her "particularly precious" involvement in the Friends of Science Assistance Society? There are as yet no answers to these questions…

Nevertheless, not only was it a time when competence could take the place of titles but as history would have it, it was also a time when the Muséum was desperately in

need of competent taxonomists to classify the astounding amount of material that was arriving from throughout the French Empire. Between 1878 and 1907 the herbarium had tripled in size.[24] In 1908, Muséum Director Edmond Perrier bitterly criticizes the insufficient budget, buildings, work space and staff.[25] Henri Lecomte, Chair of Botany and Classification of New Families of Spermatophytes, in his critical *Deuxième rapport annuel* in 1910 reiterates these criticisms ending with a plea for improvements in the near future.[26]

This same report tells us also that, of the volunteers "who classify and prepare the collections", the most important for their invaluable work were "MM. Benoist, de Boisseau, Buchet, Mlle A. Camus, and Monsieur E. G. Camus" (p. iv).

Edmond Gustave Camus

It is without question that we owe to Aimée Camus' father her passion for botany as well as her perspective on systematics. M. Camus was a pharmacist, who retired from this practice in 1908 to devote himself entirely to his passion for botany.[27]

In the thirty years that E.G. Camus shared between being pharmacist and botanist, he published hundreds of articles and several major monographs (orchids, willows, bamboos). He was a major collaborator in several *Flore de France* and instrumental

4/ The corner of 148, rue de l'Abbé Groult and 199, rue Lecourbe, where the pharmacy that was Monsieur Camus' still exists. After taking a few photographs, I went inside and before I could finish my introduction, "Hello, I'm doing some research on a very famous French lady botanist…" the pharmacist interrupted me with, "Madame Camus?" I nearly fell on the floor when she followed with, "If you want to learn about the Camus, perhaps you should meet Madame Falgarona, who is the widow of the man who inherited a large part of the Camus estate when Blanche died." I followed her advice.

5/ Aimée Camus by Blanche Camus.

in bringing to life (as was Aimée) Henry Lecomte's, *Flore Générale de l'Indochine*. A fervent believer in the importance of knowing your own local flora and of spending a maximum amount of time in the field, Monsieur Camus traveled throughout France and in Switzerland (but never left the continent) botanizing, enriching his herbarium… and discovering hybrids. He stresses the importance of botanizing in the field as opposed to in gardens because, according to him, not only are plants in cultivation different from their wild counterparts, but the variation they show is not sufficient to grasp the degree of variation within a species.[28]

Interested amateur and professional botanists of the time could read in the *Journal de Botanique* (1888), "A research committee has been formed, under the direction of Professor Chatin, to study problematical plants and to explore the different floristic stations near Paris, about which as yet nothing has been published. Persons wishing to participate in the botanizing excursions that will be organized by this committee can obtain additional information from Monsieur Camus, 58, blvd. St. Marcel."[29]

Of the hidden parts of plants

From very humble beginnings and with very little formal education as a young man, Gaspard Adolphe Chatin (1813-1901) went on to become medical doctor, pharmacist, and botanist. From 1874 onwards, E.G. Camus, who would have been 22, was a fervent disciple of Monsieur Chatin's approach to botany and his passion for botanizing in the field. But his most important influence on his students, and certainly on Monsieur Camus, was his belief that internal (hidden) characters were "linked" to external morphological characters and therefore that comparative anatomy was essential to systematics.[30] The title of his thesis, defended in 1840, is quite revealing: *Comparative anatomy of plants applied to classification. The translation of the internal organization or of the hidden parts of plants by those found at their surface.*[31]

This anatomical approach to classification (plus a penchant for hybrids, discussed below) is the Camus signature. Of their first major father and daughter publication, *La Classification des Saules d'Europe et Monographie des Saules d'Europe*, Henri Lecomte writes, "the authors have had the good idea … of using both external morphological characters and those of organ structure; and one finds, for example, standard dichotomous keys followed by keys based on organ structure and a very original key designed to link the results from both. Not enough good can be said of introducing these anatomical characters into a domain that Botanists have for too long tried to restrict to external morphology."[32]

In the joint publications with her father, Aimée Camus was responsible for all of the anatomical work and she continued with this method (morphology and anatomy) throughout her life (up until about half way through *Les Chênes*). Where did she learn these skills? For, with or without a diploma, everyone needs a teacher.

Anatomy and politics

Philippe Edouard Léon Van Tieghem (1839-1914) was a biologist, physicist, and lastly, botanist. In 1879, the year Aimée Camus is born, he is appointed to the Chair of Botany at the Muséum. Between 1853, when Adrian de Jussieu's Chair of Field Botany is transformed into the Chair of Paleontology, until 1874 when a new Chair is created (Classification and Natural Families) botany was nonexistent at the Muséum.[33] Between 1878 and 1907 the herbarium collections triple in size, but the Muséum is not prepared for this exponential explosion.

By 1890, after 11 years with Philippe Van Tiegehem in charge of botany at the Muséum, things are put back on a naturalist track. By 1892, all of the Chairs without collections are abolished. The valorization of the only resource truly unique to the Muséum, the collections, was also a strategic choice for the Muséum, forced as it was to abandon little by little some of its historical prerogatives. This was then the golden age of the monograph, that provided a panoramic and at the same time (thanks to Philippe Van Tieghem's anatomical approach) a very detailed view of groups of living things based on an incredible number of microscopic manipulations and observations, minute measurements and comparisons. Anatomy was to give systematics its mathematical letters of nobility.

The hybrid question or, who wants to count pebbles anyway?

In *Les Orchidées Sauvages*, Sébastien Lesné, after recognizing the value of the work done by the Camus team on orchids, writes, "One is often confounded when faced with the plethora of varieties described by our two botanists. It is often difficult to distinguish between the names of these hybrids depending on which parent they more resemble. At the time of the triumph of splitting the Camus were indeed genial precursors."[34]

Henri Lecomte, in his biographical notice on E.G. Camus, also points out his passion for hybrid plants."[35] And although I am sure that this was not his intention, Jacques Léandri, while describing the Camus' view on hybrids, points to the paradox of this position: "Identifying this multiplicity of hybrids allowed [them] to determine that species polymorphism is not as wide-spread as first appears."[36] Because of course the other way around: "Identifying the extent of species polymorphism allowed [them] to determine that hybridization is not as wide-spread as first appears", would be just as plausible.

Roughly at the same time, but not in France, the foundation for cladistics is being invented and it is interesting to note that it was in part the internal logical inconsistencies of the systematics of their day that led certain biologists to this new way of thinking. What did Madame Camus think about systematics from 1934 to 1954 as she progressed through the genus *Quercus*?

In a letter to Henry Fawcett in 1861, Charles Darwin criticizes the position that science is merely about collecting facts. "How profoundly ignorant B. must be of the very soul of observation! About thirty years ago there was much talk that geologists ought only to

6/ Aimée Antoinette Camus.

observe and not theorize; and I well remember someone saying that at this rate a man might as well go into a gravel-pit and count the pebbles and describe the colors. How odd it is that anyone should not see that all observation must be for or against some view if it is to be of any service!"[37]

With what "view" was Madame Camus working? The answer to this question, lies in the French brand of resistance to Darwinism that remained strong in the first half of the 20th century."[38] The paradigm, during Madame Camus' formative years and during much of her professional life at the Muséum, was greatly inspired by Isidore Geoffroy Saint Hilaire's (1805-1861) version of transformism called the "limited-variability-of-type" theory. The name speaks for itself: if species (the type) show limited variation, then any marked difference or what is perceived as such requires the creation of new taxa.

The case for Quercus

Nevertheless, in this age of splitting, Madame Camus is critical of the extent to which her contemporaries indulged in this activity as concerns the genus *Quercus*. While stating her case for limited-variability-of-type: "In the genus *Quercus*, many species, especially those whose natural distribution is vast, are very polymorphic. After careful study, however, one will find that to the species type can be attached many varieties, subspecies and races."[39], she also states, "This polymorphism … has caused many authors to distinguish and to accept as species many varieties. [These] species have thus been

divided to dispersal and [this] has] resulted in a great number of synonyms."[40]

Of the 308 new names in *Les Chênes* by A. Camus (285) or Hickel & A. Camus (23), 52 are (still) accepted today. While this might not seem like a very good score, of her contemporary, Michel Gandoger's (1850-1926), 224 published names of the genus, not one is accepted today.*

Following the method used in the Camus monograph on orchids and willows, Madame Camus often creates (or accepts) two names for hybrids, depending on which parent is more visible. Thus the hybrid between *Q. pyrenaica* Willd. and *Q. robur* L. should be identified as *Q.* ×*andegavensis* Hy if *Q. pyrenaica* is dominant, and *Q.* ×*rechinii* (Rouy) Hy if *Q. robur* is dominant. Today, only the former is an accepted name for this hybrid.

Les Chênes, Monographie du Genre Quercus

The three volumes of text (2,839 pages) start with a 156-page introduction to the genus, 39 of which are devoted to morphology, 80 to anatomy, and 2 to chromosomes. The remaining 25 or so touch on different subjects: germination, cultivation, the uses and qualities of oak wood, natural distribution, and hybridity. The three atlases comprise 522 morphological plates and 97 anatomical plates. On each plate, the number of illustrations ranges from 5 to 40.

Les Chênes was published in a collection called the *Economic Encyclopedia of Forestry* along with Robert Hickel's *Forestry Dendrology*, Arturo Bruttini's *Forestry Dictionary*, and the Camus monographs on bamboo, *Cupressus*, *Castanea* and *Castanopsis* (these last two together in one monograph). *Les Chênes* was published in the great flurry of activity for the colonial effort that characterized French science from the end of the 19th century through the first half of the 20th.

The erroneous view that Madame Camus devoted a large part of her life to the genus *Quercus* comes, I think, from an editorial imprecision. The title of the book is always followed by the dates, 1934-1954. In fact it was not 20 uninterrupted "oak" years. Atlas I was published in 1934; atlas II plus tomes I and II were published between 1936 and 1939; atlas III was published in 1948 and finally, tome III (in two volumes) from 1952 to 1954, with the genus *Lithocarpus* taking up a large part of both of those. This is not to diminish the importance of *Les Chênes* – quite the contrary. Between 1934 and 1954, in other words in that same period of time, Jacques Léandri lists 150 different publications of only her major works, including many papers on the genus *Quercus*.[41,42]

Regardless of its shortcomings, *Les Chênes* is to this day the most comprehensive classification that has ever been attempted of the genus, both from a geographic and from a specific point of view. If we compare all of the oak classification systems that have been proposed for oaks since 1871, we find that "although different groups of species within the genus were given different ranks by different authors, they roughly recognized the same major groups".[43]

Madame Camus' Cyclobalanopsis

Madame Camus writes, "The subgenus *Cyclobalanopsis* comprises types of more closely related affinities than those in subgenus *Euquercus*. The divisions *Longiglans* and

* Many thanks to Jean-Louis Hélardot for having pointed out the significance of Mme Camus' relatively "good score" on this issue.

Breviglans that I have accepted for *Cyclobalanopsis* are hardly more than subsectional groups and do not have the same value as the *Euquercus* sections. [The subgenus *Euquercus*] comprises markedly different types of multiple form."[44]

And yet, in this very complex *Euquercus* subgenus, anatomy is not wielded as the tool by which to know, by which to distinguish, the different species. Subgenus *Euquercus* is divided by Madame Camus into 6 sections, that are further subdivided into 105 subsections, 50 of which belong to the section *Erythrobalanus* (the red oaks).

Nowhere in *Les Chênes* is there this "original key", such as the one in the Camus monograph on willows (a key to link the two other keys).

There are 44 new taxa (out of a total 93) described by Camus or Hickel & A. Camus in the *Cyclobalanopsis* section (tome I, pp. 178–373) plus 4 new species that appear in *Additions et Corrections* (pp. 1197–1215) at the end of tome III. Of these 48 names, 24 are accepted today, 10 are considered synonymous with other Camus taxa, and 14 are synonymous with taxa by other authors.

Of these 24, only 6 are represented by photographs (and/or herbarium specimens and Camus drawings) in *Le Guide des Chênes* by Antoine le Hardÿ de Beaulieu and Thierry Lamant.[45] Of the remaining 18, 8 are represented only by herbarium specimens and/or Camus plates and the remaining 10 are not included in *Le Guide*. Only 5 out of the 24 are reported in cultivation: *Q. argyrotricha*, *Q. gambleana*, *Q. macrocalyx*, *Q. saravanensis*, and *Q. stewardiana*.

Madame Camus writes at the end of her introduction to *Les Chênes*, "The oak forest that enabled our ancestors to fight against hunger, cold, darkness, that gave them shelter, weapons, construction materials, furniture, boats, means of transport, is today in part free from these obligations. Coal, iron, cement, concrete are all replacing wood; but the Oak with its qualities remains of great usefulness to man and its protection is of the utmost importance. Further, while industrial expansion has brought ugliness to so many places, is not the forest one of the last havens of beauty?"[46]

Where are Madame Camus' and Monsieur Hickel's 24 *Cyclobalanopsis* today? Are some of them extinct? Are some of them endangered? Can some of them be saved? What do we know of them?

To date, none of them have been assessed by the IUCN, and in the *Red List of Oaks* by Oldfield and Eastwood, of the 6 that have been assessed, 2 are endangered and 4 are data deficient. So it would appear that to answer these questions we must get together a group of amateurs and go and find these oaks.

Acknowledgements

My deepest thanks go to Madame Mercedes Falgarona for sharing her memories, documents, paintings, and photographs with me. To Henri de Brem, who gave me his copy of *Les Chênes*, I do not know how to express my gratitude. To Lord Lloyd Kenyon and his dislike of feisty librarians that pushed him to undertake (and accomplish) the monstrous task of scanning all of the plates in *Les Chênes*, *mille mercis*.

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