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OBITUARY

Doctor Françoise ATHIAS BINCHE (1946–2013)

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Our friend Françoise Athias-Binche, acarologist and ecologist, passed away on the 19th November 2013 after a long disease that she endured during many years with a lot of courage.

Her life story began in Rovego (Algeria) on the 15th June 1946. She was the daughter of Medicine Doctor Jean Athias and of Dr. Claire Athias-Henriot the outstanding researcher on gamasid mites. She had a peaceful childhood with her younger brother Pierre in Algiers where she finished the elementary school. In 1961, she continued the secondary school at the Lycée français de Bruxelles where she lived with her grand-mother. In 1962 the political events forced the Athias family to move to France. Dr. Claire Athias-Henriot, acarologist, started to work at INRA in Dijon where the family began a new life. Claire, 'Madame' Athias, as the French acarologists named her, transmitted to her daughter the taste for biological studies: she studied Natural Sciences at the university of Dijon and she was graduated in 1968. Her scientific career, which will be
discussed in the following pages, and her personal life started in Banyuls-sur-Mer: in April 1976, she married Jean-Louis Binche, a young researcher for sea environment and their son Gabriel is born on 11th December 1977.

Before recapitulation of her scientific work, we should get to know her personality. She was as her husband described her "un être d’exception". Françoise was a clever, lively women with sparkling eyes, joyful smile and sense of humor. She was interested, enthusiastic about many different subjects, and argued passionately trying to rally other people on her ideas. She worked with seriousness and passion. Françoise was a wonderful human being, she loved life, her family, her friends and science!

The Scientific Work
Françoise 22 years old, graduated, had left the Burgundy University for Paris and had the opportunity to participate to a large program of research in Ivory Coast at the French Research site of Lamto. Several scientists initiated this program in 1962 (Lavelle P. 2010). She started working in Africa from 1969 and she published the results of her works from 1969 to 1975. At Lamto, she met several young, but who became eminent, scientists who have continued to work on soil fauna on earthworms (P. Lavelle) or Termites (Josens) or as ecologists (R. Barbault., P. Blandin, etc.) and evidently the great figures of the French Ecology in this period, the duo Maxime Lamotte (1963-1989) and François Bourlière (1962-1983).

The first field works in the research site of Lamto (1969-1973)
This African period helped Françoise in being aware of the largest problems that field ecological studies could reach, and practiced a pluritaxonomic approach rather than a single disciplinary study. She validated her field work on soil fauna on earthworms (P. Lavelle) or Termites (Josens) or as ecologists (R. Barbault., P. Blandin, etc.) and evidently the great figures of the French Ecology in this period, the duo Maxime Lamotte (1963-1989) and François Bourlière (1962-1983).

The Research in Banyuls-sur-Mer
In order to engage new works on Uropodides, Joseph Travé recruited Françoise (CNRS) notwithstanding obstacles: she engaged in new researches in Banyuls-sur-Mer UPMC (Université Pierre et Marie Curie Paris VI), working in terrestrial environment, in the same laboratory of eminent acarologists, Yves Coineau and Joseph Travé, and terrestrial ecologists J.P. Knoepfler (herpetologist), R. Fons (mammals specialist) and R. Prodon (ornithologist), in a mainly devoted to Marine and Mediterranean environment, the Laboratoire Arago. This
laboratory allied the quality of a field station of research and the support of the Parisian environment.

During the "post PhD" period of Françoise, a new dynamic was initiated among the European Acarologists: the journal *Acarologia* has been founded by Max Vachon and François Grandjean in 1959, and the closest Grandjean’s disciples (Y. Coineau, J. Travé, C. Athias-Henriot, and P. Lebrun, A. Aeschlimann, L. Van der Hammen, JC Lions, A. Fain, M. Naudo, C. Bader, J. Cooremans, F. Cassagne-Méjean...) decided to create the S.A.L.F. (Society of French Speaking Acarologists) that gathered West European Acarologists. If the journal has been founded to facilitate publications in all aspects of acarology, the transmission of Grandjean’s factual, and too philosophic, approach of mites, and of the knowledge acquired by his disciples, needed now workshops for young researchers, and a recruiting strategy of new acarologists.

In 1973, a meeting in Montpellier with Prof. Roland Legendre decided to initiate this strategy with the first European Course of Acarology: this course was held in Louvain-La-Neuve (Belgium) under the responsibility of Philippe Lebrun in 1974, without gratification for teachers. The young researchers who participated were Françoise, Henri M. André, G. Wauthy, M. Bertrand, J.L. Camicas, Alain Bellido, M. Baillod, L. Perez Iñigo, D. De Saint-Georges... and the teachers were the most famous European Acarologists.

During these 15 days a real sympathy has been created among this group, between confirmed researchers and the youngest. Françoise finalized the contract with Joseph Travé for the problematic of the Thèse d’Etat: she had acquired a global knowledge on microarthropods, and was interested in Scutacarids and Uropodids. The natural Reserve of the Massane near Banyuls will be her preferential site as it was for J. Travé and where she was helped by Francis Duran, recently died few weeks later than Françoise.

The French school of Acarologists is deeply marked by the Grandjean’s works, and Françoise showed that she was able to work finely as morphologist with an excellent quality in the representation by her studies on the morphology of the Uropodidae. From 1977, she published a first serie of articles on the relation between infracapitulum and first pair of coxae, and observations on *Allo dynichus flagellifer*, whereas she began sampling soil cores at the Natural Reserve "La Massane" a beech forest, in a strict and rigorous sampling plan.

The subject of the work initiated was in the Massane Forest, in the same direction than her first thesis but studying the role of mites in a stable ecosystems (beech relict forest), after having studied their place in an African savanna frequently disturbed by fires. Quickly, she enlarged her work by collecting data in other countries to replace the studied area among the general functioning of the temperate forest ecosystem. The right choice of biological material was the Uropodid mites that are involved in recycling the organic matter, that have univoltine or multivoltine cycle, that are phoretic at the deutonymphal stase, that are associated by phoretic behaviour to insects, and that are mainly microphagous. These mites could be ecological indicators, as other systematic groups of the saproxylic complex.

She allied both quantitative and ecological studies on uropodids, morphological approach especially on *Allo dynichus flagellifer* (Berlese, 1910), and on the post-embryonic development of uropodids. In the Massane forest, she demonstrated that the deutonymphs exhibited two morphs one can be qualified of normal, whereas the second is phoretic, differs in morphology and .physiology; the studies carried on by Françoise on Uropodids and Joseph Travé on Oribatids characterized the functioning of the saproxylic complex of the oldest forest (Travé, 2000).

In 1981 in Paris, she sustained her thesis: "Contribution à la connaissance des Uropodides libres (Arachnides: Anactinotriches) de quelques écosystèmes forestiers Européens", a huge work where she had shown her ability to work as well on morphology, taxonomy, and ecology and that the ecological statistics and modeling in the "ante personal computer" period, could be done with profit, notably on the demography. She illustrated the current thinking that taxonomy and ecology are not antinomic. The identification of both the species and ecological
limiting factors, brings up a realistic interpretation of natural dynamics in the ecosystems, illustrating a general common sense (Davidson, 1952), contrasting with the “global approach” of ecosystem perturbations that was in vogue. It was in France the time of the emerging phase of the “holist interpretation” of ecological data (allied with the Gestalt theory). All has a “field” and that the things and the organizations are non-understandable if one does not consider them in their field, the stress laid on the process, affirming that all is of ceaseless process of creative change; so, it is necessary to seek the aptitude of the organizations to form structured totalities. This approach that marked the research seminars underlines the interdependence of the organism and its environment.

The studied object must be understood in a larger context: ecology and theories

First formulated by Jan Smuts (1926), the holism has been traditionally defined as a philosophical theory that states that the determining factors in nature are wholes which are irreducible to the sum of their parts and that the evolution of the universe is the record of the activity and making of such wholes. More generally, it is the concept that wholes cannot be analyzed into parts or reduced to discrete elements. Françoise was aware of this concepts and she was attached, in the line of MacArthur and Wilson (1967) to the “niche theory” and “insularity”. She illustrated the problem of the adaptation of demographic strategies and their role in the definition of the niches (Hutchinson 1957, Margalef 1957, 1963, 1968), the balance between available resources and populations, illustrated in France by ecologists as J. Blondel of the CNRS in the continuity of the French ecological research initiated in Lamto. Françoise was avid of knowledge, and in contact with colleagues in different disciplines: in the laboratoire Arago, with specialists of marine environment, with her colleagues of the CNRS, or of the University of Paris and with the University of Perpignan, notably with parasitologists. So, she was aware of the maelstrom of ideas that reigned in these circles, enlarging the strict acarological domain, picking up with enthusiasm when these concepts seemed convenient to be used in her researches. In parallel, she continued to animate the SIALF as secretary publishing SIALFIA, the “bulletin de liaison” of the European members.

From the Uropodidae to a global overview

Ecological way of life, adaptations to the environment and evolutive process can explain, at least in part, repartition of the organisms. Françoise develops these concept and the uropodids are THE model: they are dependent of the resource, they need homogenous life conditions, but they are adapted to dispersion by the phoresy on more mobile insects that permits gene dispersion and contributes to the continuum of the communities. In 1984 she began to publish in this domain in Acta Oecologica (1984), Acarologia (1984), Pedobiologia (1985), Research and Review in Parasitology (1993).

In 1994, she made syntheses of the acquired knowledge in a small book that she edited herself: “La phorésie chez les acariens”. She adopted an evolutive angle of view, based on the examples collected in different groups, mixing phoretic and parasitic species. She illustrated and attempted to illustrate the models of the gradation from free living organism, to emergence of phoretic behavior, to gradual existence of parasitic phases to the ultimate stadium: the permanent parasites. She refers to many groups of mites, notably to Hydracarina that has been already used to express this gradation (Mitchell, 1967, 1970).

The phoresy can be considered, according each case, as accidental, frequent or/and obligatory. If it is obliged, phoresy is the best way for dispersion and to exploit rare and/or transient resources. Attractivity of the host facilitates greatly its efficiency and G.W. Krantz (1991) showed the gradation towards selectivity of the carrier by the phoretic organism in the Macrochelidae. Temptation is great to consider that phoresy is a first step towards parasitism (Athias-Binche & Morand, 1993): predation is often determined by olfactive attraction, selective phoresy too, and some organisms may have got concrete this temporary association by transient ectoparasitism. The discussion with parasitologists was fructuous: Françoise considered more
and more the global evolutive schema, and envisaged that phoretic behavior could be a, too often ignored, tool for speciation, notably by progressive reproductive isolation! (see notably Combes, 1995). It was a great step toward integrative biology!

**Other works and activity**

To any person knowing Françoise, it is impossible to imagine her quiet in a room and not interested in what was happening all around. She was very curious and enthusiastic. She participated in various program of research and notably she was involved in the study of global responses to forest burnings on the Mediterranean fauna. She participated to integrated program to analyze the effect of fire on soil arthropods whereas R. Prodon and R. Fons her Banyulenc colleagues identified the perturbations on Vertebrates (Prodon R. *et al.* 1987; Prodon *et al.* 1989). As other studies on Mediterranean façade (Gillon *et al.* 1987), they concluded on the dynamic of reconstitution depends on the dominant trees and underlined the effect on the diversity.

Decomposition of organic matter was relied to the diversity of microarthropds, their diversity and their distribution: Françoise extended her work to Spain and had begun a synthesis in collaboration with the University of Barcelona. It will be utopic to retrace all the activities of Françoise. She was interested in the Nature conservation, in Banyuls and in National Park of Port-Cros, she had many relation with other acarologists all over the world notably with Romanian colleagues, and she did not hesitate to bring some help in studying some phenomenoms out of her specialization (Fernandez & Athias-Binche, 1986).

Françoise Athias participated greatly to the scientific life of the European Acarologists, first by her role in the journal Acarologia were she published some interesting articles, on the morphology and on ecology. She was the secretary of the SIALF (Société Internationale des Acarologues de Langue Française). Notably, in 1988, she organized in Banyuls-sur-Mer the Colloquium for the 20th anniversary of the SALF, and 50th anniversary of the Grandjean’s “Stase Concept” collaborating with the Presidents (J.C. Lions, Henri André) on "L’ontogenèse et le concept de stase chez les Arthropodes". She participated with enthusiasm to the French course in Acarology, notably on mesostigmatic mites and ecology. She began too the coordination of an old project of European Acarologists: the "Dictionnaire d’Acarologie" based on compiled articles wrote by each specialist on selected families. Unfortunately, this project did not reach the final phase. Fortunately H. André and J.K. N’Dri published last year the "Bréviaire de taxonomie des acariens": it is the goal that the Sialf intended to realize in 1995!

In 1995 Françoise was laureate by the distinction “Prix Ida and Embrik Strand” by the Société Zoologique de France, she participated in the organization of the first FIFI (Festival International du Film sur les Insectes 10-14 05-1995. Professionally she was member of the department of Evolutive Biology, member of the Commision of the CNRS, member of naturalist societies and even author of a
report on the Teaching of Ecology in France (Société d’Ecologie). She was highly interested in Nature Preservation and involved as Scientific and member of the civil society, National Park of Port-Cros, Natural Reserve of the Massane Forest, and the Marine Reserve Cerbère-Banyuls.

Françoise has been a fair colleague in Science as in the current life, she marked more than 30 years of the French Acarology by her dynamism, and she succeeded and she is a reference in fundamental acarology and in soil ecology. No doubt that the sickness interrupted too quickly her carrier.

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