Bibliography, FRANCE **Patrick Falcone**

Armendariz I., Arpin P. (1996): Nematodes and their relationship to forest dynamics: I. Species and trophic groups. Biology and Fertility of Soils 23/4, 405-413
Abstract: Soil nematode population were studied in parallel with successional stages of forest dynamics (clearings after wind damage, growth, mature and senescence phases) in a nature reserve of virgin beech forest within the Fontainebleau forest (La Tilliaie).
Key-words: Free living nematodes, biological indicators, canopy gaps, forest dynamic

Astrie G., Pechin A. (1987): Effect of non-exploitation on the development of different forest types in the Pyrenees (Incidence de la non-exploitation sur le devenir de divers types de forêts pyrénéennes). Mémoire d'ingénieur, ENITEF/CEMAGREF Grenoble, 120 p.
Abstract: The objective of the study is to evaluate the effect of exploitation stopping on irregular fir and beech high stands.
Observations and measurements in 40 sample parcels corresponding to about 14 % of the concerned area have been achieved :
- inventory of the Fauna and Flora in about one hundred plots (4 ares) ;
- stand structure mapping based on the Leibundgut and Mayer's typology established for natural forests in Central Europe.
Beech stands are mainly the result of human activities and silviculture. Mixed fir and beech stands can be considered as climatic. However, since the beginning of this century, low exploitation did not alter deeply the natural dynamic of the forests.
In comparison with the primary forests, mixed fir and beech stands seem to be close to an original steady state. They could reach easily this original state in case of exploitation stopping. Considering their origin, beech stands seem to be more unstable.
Key-words: Exploitation, forest dynamic, stand typology, beech, Pyrenees

Auge V., Riond C. (1994): Typology, dynamic and measures of conservation of spruce forests on lapies in the future "Natural Reserve of Hauts de Chartreuse" (Typologie, dynamique et gestion conservatoire des pessières sur lapiaz de la future Réserve Naturelle des Hauts de Chartreuse) Mémoire de troisième années, ENGEF - CEMAGREF, 56 p.
Abstract: This study deals with the current problem of the protection and conservation of noteworthy woody spaces, in the case of spruce forest on lapies in the future "Natural Reserve of Hauts de Chartreuse". The spruce forest populations have been studied through general features and then more precisely on the site.
A brief populations typology have been achieved according to the method elaborated by the "Mountain Forest Team of the CEMAGREF - Division Protection against the erosions" of Grenoble. This first step has leaded to a dendrometric and structural description of populations types that are existing in the forest and then to a concise distribution cartography.
The second one was to understand the working of each type, thanks to permanent "little places" big enough to collect numerous data on dendrometry (age, diameter, height) structure and space. From all these analysis, some assumptions about populations natural evolution have been deducted.
Key-words: Forest dynamics, stand typology, *Picea abies*

Blanchard E. (1995): Analysis of the linear dynamics of the vegetation in the "Bois du Chapitre" (Hautes-Alpes). (Analyse des modalités de la dynamique linéaire de la végétation du bois du Chapitre (Hautes-Alpes). DEA, Université d'Aix-Marseille III, 44 p.
Key-words: Linear dynamics, forest dynamics, Alps

Carbiener R., Schnitzler A., Walter J.M.N. (1988): Problems of forest dynamic and site conditions definition in alluvial environment (Problèmes de dynamique forestière et de définition des stations en milieu alluvial)
In: Gehu J.-M (ed.): Phytosociologie et foresterie. Colloques phytosociologiques 14, 655-686. Berlin (J.Cramer)
Key-words: Forest dynamic, alluvial forest

Cecconello A. (1991): Inventory of subnatural forests in the Vosges (Inventaire des forêts subnaturelles du Massif Vosgien)
Mémoire de DESS Espaces et Milieux, ENGREF Nancy/Université Paris VII, 250 p.
Abstract: Several subnatural forests remain in the largely exploited Vosges Massif. All the forests have been touched by human activities with various intensities in different periods of time. Due to the diversity of stand structures and composition in subnatural forests, it is difficult to identify a single model for the subnatural forests. None of those forests has been studied in details.
Key-words: Inventory, subnatural forest, forest dynamic, Vosges

Cluzeau C., Pont B. (1997): Long term monitoring of the natural dynamics of alluvial forests in six Nature Reserves. Results of the first set of measurements (Suivi à long terme de la dynamique spontanée des forêts alluviales dans six Réserves Naturelles. Résultats de la première campagne de mesures)
Réserves Naturelles de France, 43 p. + annexes
Abstract: A monitoring program of the alluvial forests dynamics have been settled in the network of fluvial Nature Reserves. The objective is to collect scientific information about their functioning and to evaluate the opportunity of a human intervention in those forests. 329 permanent plots of 6 ares each have been settled in 1994 in six fluvial Nature Reserves. Pedological and botanical surveys and dendrometric measurements on dead and leaving trees have been achieved in 1994 and will occur each 10 years.
Key-words: Alluvial forest, forest dynamic, monitoring, nature reserves

Faille A., Lemee G., Pontailler J.Y. (1984): The Gap dynamic of an inexploited forest (biological reserves of the Fontainebleau forest) I. The origin and the present state of openings. (Dynamique des clairières d'une forêt inexploitée (réserve biologique de Fontainebleau I. Origine et état actuel des ouvertures)
Acta Oecologica, Oecolia. Generalis 5/1, 35 51
Abstract: The openings in forests caused by the natural death of trees are of great importance for the dynamics of inexploited forests. They have been studied in two integral reserves of the Fontainebleau forest. Their causes and repartition in both time and space have been analyzed at the tree level (species concerned, diameters of boles, causes of death), actual gaps level (the timing and number of events causing the opening) and global phytocenose level (number and area of gaps, relations with the structure of the tree population and the environment).
Difference between the two reserves in terms of recent evolution have been observed because, owing to the large number of tall trees, to the development of a forest podzol and to the neighbourhood of deforested areas, one of them had been more affected by the storm in 1967.
Key-words: Tree mortality, forest dynamics, natural gaps, glades, biological reserves

Faille A., Lemee G., Pontailler J.Y. (1984): The Gap dynamics of an inexploited forest (biological reserves of the Fontainebleau forest) II. - Closing of present openings (Dynamique des clairières d'une forêt inexploitée (réserve biologique de Fontainebleau). II. - Fermeture des clairières actuelles). Acta Oecologica, Oecol. Gener. 5/2, 181-199
Abstract: The closing of gaps caused by the death of trees is ensured according to three

strategies, the mechanism and efficiency of which are described : tree crowns enlarging along edges, releasing of stems previously suppressed by shading and regeneration from seedlings established later in openings. By its pre-eminence on other trees and its shade-resistance, beech is the essential agent of this dynamics.
Closing by regeneration is of decisive importance in case of large gaps avoid of shrubs or small trees ; it is slowed by a heavy predation and sometimes colonization by social heliophytes. Three stages have been recognized during closing by regeneration : a preliminary stage before the first mast-year, a stage of establishment of open populations and a stage of populations closed by crown enlargement and appearance of new regeneration.
Key-words: Forest dynamics, gap, regeneration, biological reserves

Foltête J.M. (1995): Characterization and spatial organization of the forest stands structure in the Nature Reserve "du Ravin de Valbois" (Valbois ravine - Doubs) (Caractérisation et organisation spatiale de la structure des peuplements forestiers de la réserve naturelle du Ravin de Valbois) Mémoire d'ingénieur, ENESAD, 85 p.
Abstract: The Nature Reserve of Valbois (Doubs) has an unexploited forest area with subnatural forest characteristics. A structural study was made on a large place including this subnatural forest. This study drew 9 distinct structural clumps. Their characteristics and their spatial organization allow to identify them to theoretical phase of sylvigenesis and to consider their probable development throughout the description of an hypothetical sylvigenetic cycle.
Finally, considering the noting of spatial and temporal structural diversity, it appears that the studied woods can fix their persistence in the present limits of the unexploited forest reserve.
Key-words: Forest dynamics, sylvigenetic cycle, structural diversity

Gonin-Reina P. (1988): Contribution to studying the unexploited forests evolution in the Pyrenees (Contribution à l'étude de l'évolution des forêts non-exploitées dans les Pyrénées) Saint-Gaudens : Association Forêts Pyrénéennes, 76 p.
Abstract: The objective of the study is to improve the knowledge of the sylvigenetic cycles in unexploited forest stands in the Pyrenees (31 plots) :
- definition of the sylvigenetic stages ;
- description of the sylvigenetic cycles ;
- study of the forest stands renewal : tree species longevity, regeneration and breaking up process;
- individual growth analysis.
Key-words: Forest dynamics, mountainous forests, subnatural forests, typology, Pyrenees

Greslier N. (1993): Inventory of subnatural forests in the French Alps. Inventaire des forêts subnaturelles de l'arc alpin français. ENGREF/ CEMAGREF Grenoble, 220 p.
Abstract: The aim of this study is to give a subnatural forestry ecosystem's typology and to propose one investigation and classification method, which appears as a very good one to appreciate the quality of research places and to determine which of them need to be protected. This point of view is very similar to the EEC's : to put some pilot sites in, which will have conservatory and observatory role for the subnatural forest.
Key-words: Forest dynamics, mountainous forests, subnatural forests, typology, Alps

Greslier N., Renaud J.P., Chauvin Ch. (1995): Subnatural forests in the French Alps : reflection on a methodology for an inventory and a typology of the main subnatural alpine forests (Les forêts subnaturelles de l'arc alpin français : réflexion méthodologique pour un recensement et une typologie des principales forêts alpines peu transformées par l'homme). Revue Forestière Française 47/3, 241-254

Abstract: The paper corresponds to a forestry ecosystem's typology of subnatural alpine forests and lists some subnatural forest stands inventoried in the Alps.
Key-words: Forest dynamics, mountainous forests, subnatural forests, typology, Alps

Lemee G. (1985): Role of shade intolerant species in the dynamics of a natural forest dominated by beech (Fontainebleau forest) (Rôle des arbres intolérants à l'ombrage dans la dynamique d'une hêtraie naturelle (Forêt de Fontainebleau)). Acta Oecologica, Oecol. Plant. 6/20, n°1, 3-20
Abstract: Biological reserves in Fontainebleau forest are strongly dominated by beech, a shade tolerant tree. Among gaps naturally occurring in these reserves, some have been closed by shade intolerant species, some with *Pinus sylvestris* (disappeared to-day), *Betula verrucosa* and *Quercus petraea*, some with *Fraxinus excelsior*. Location, spatial structure, age and dynamics of these populations are analyzed, together with the factors that have allowed their establishment : opening of large gaps followed by diaspores dispersion, suitable microsites, specific biological characteristics, weak competition.
Conjunction of these conditions is a rare event whose frequencies is inferior to the life span of shade intolerant species, except for oak that lives longer than beech. This regime of natural disturbances acts strongly to reduce species diversity.
Key-words: Natural gaps, forest successions, shade intolerant species, biological reserves

Lemee G. (1987): Dynamic of canopy closure by beech regeneration and morphometric development in gaps in natural forest (Biological reserves of the Fontainebleau forest). (Dynamique de fermeture par régénération et évolution morphométrique du hêtre dans les vides d'une forêt non exploitée (Réserves biologiques de la forêt de Fontainebleau)). Bulletin d'Ecologie 18/1, 1-11
Gap recovery in a natural beechwood in Fontainebleau forest is ensured by beech only. The regeneration occur for one half in this closure. Several states are described : 1) a latent phase before the first seed-bed, variable in duration ; 2) a establishment phase of isolated seedlings, which duration is related to plant density ; 3) a phase of maximum competition after the complete occupation of available area.
Morphological characteristics and growth of seedlings in open and closed populations are compared. A description of structural properties and evolution of completely closed population is presented.
Key-words: *Fagus sylvatica*, natural regeneration, stand characteristics, biological reserves

Mortier F. (1990): Sylvigenesis and spatial structures in temperate forests - bibliography and practical studies : primary natural forest in plain, secondary unexploited forest in mountain (Sylvigenèse et structures spatiales en forêts tempérées - synthèse bibliographique et étude de cas : forêt primaire naturelle de plaine, forêt secondaire non exploitée de montagne)
ENGREF Nancy, 197 p.
Abstract: Bibliographic synthesis of work methodologies used for the description of natural or subnatural forest stands : spatial or non spatial approach, qualitative or quantitative.
Study of two different cases in primary forest in plain (Bialowieza - Poland) and secondary unexploited mountainous forest (Bois du Chapitre - Hautes-Alpes - France).
Objectives : 1) Stands description ; 2) identification of structures according to a quantitative and spatial approach ; 3) proposals for explaining the genesis and functioning of the studied stands.
Key-words: Natural forest, spatial structure, quantitative description, multivariate analysis

Pontailler J.Y., Faille A., Lemee G. (1997): Storms drive successional dynamics in natural forests : a case study in Fontainebleau forest (France). Forest Ecology and Management 98/1, 1-15

Abstract: This study, performed by the same team for 30 yr., looks closely at the behavior of two plots of about 35 ha, dominated by beech. Since the turn of the century, several fierce storms have followed one another at fairly regular intervals (25 yr.). Storms play a major role in the cyclic dynamics of unmanaged forests, taking them away from a steady state the nearly never reach. At the scale of a plot, even strong storms were unable to upset the population structure, mostly causing only small gaps. In these conditions, spreading out or survival of woody species other than shade-tolerant beech is questionable. One may not reject totally this hypothesis : storms of outstanding intensity or climate change may affect beech supremacy.
Key-words: Forest storm, population dynamic, perturbation, canopy gap, vegetation succession, *Fagus sylvatica*

Ponthus C. (1996): Inventory of subnatural forests in the French Pyrenees (Inventaire des forêts subnaturelles des Pyrénées françaises)
ENSA toulouse/ONF, 199 p.
Abstract: Considering this inventory, there are about 33 800 ha of subnatural public forests in the French Pyrenees. All the forests have been touched by human activities with various intensities in different periods of time. They are generally the result of a past exploitation rather than the natural dynamics. Due to the diversity of stand structures and composition in subnatural forests, it is difficult to identify a single model for the subnatural forests.
Key-words: Inventory, subnatural forest, forest dynamics, Pyrenees

Renaud J.P., Mermin E., Ravanat X. (1994): Installation of permanent plots in two subnatural forests in the French Alps. Objectives, measurement protocol and results, developments (Installation de placettes permanentes dans deux forêts subnaturelles des Alpes françaises. Objectifs, protocole de mesure et résultats, développements). CEMAGREF Grenoble, 37p.
Abstract: Eight permanent plots have been installed on two French sites :
- subnatural forest of Bois du Chapitre - Hautes-Alpes (4 plots);
- subnatural forest of Sixt - Haute-Savoie (4 plots).
The objectives are :
- re-attachment to a stage of the theoretic sylvigenetic cycle using an exhaustive inventory and an analysis of the history of each plot;
- identification of the relationships between different groups using a sample of the most common forest types : from a descriptive to a dynamic approach of the shifting mosaic (eco-units);
- identification of the limits of the eco-units in a plot (homogeneous area corresponding to regeneration units).
Key-words: Subnatural forest, spatial structure, permanent plots, stand dynamic, shifting-mosaic

Renaud J.P., Mermin E., Ravanat X. (1994): Characterization and spatial organization of stand structures in an unexploited Norway spruce stand in Haute-Savoie. Objectives, measurement protocol and results, developments (Caractérisation et organisation spatiale des structures d'une pessière non exploitée en Haute-Savoie. Objectifs, protocole de mesure et résultats, développements). CEMAGREF Grenoble, 21p.
Abstract: The objective of this study is to improve the knowledge of the natural functioning of unexploited forests through 3 different examples. This first stage aims at the identification of different forest structures in a Norway spruce stand free of exploitation for more than 50 years. 7 structural types have been identified and relationships (in time) between them have been proposed.
Key-words: Subnatural forest, spatial structure, forest dynamic, spruce

Sandoz J.C. (1993): Characterization and spatial organization of the structures in an unexploited Norway spruce stand in the Alps : le Bois du Chapitre (Caractérisation et organisation spatiale des structures d'une pessière non exploitée des Hautes-Alpes : le Bois du chapitre). Mémoire ENSAIA Nancy, CEMAGREF Grenoble, 30 p. + annexes
Abstract: The Bois du Chapitre is a fir and beech forest, where logging stopped 40 years ago. The high parts of the forest where even never logged at all. Wishing to study the woods structure, 43 ha were selected and qualitative and quantitative variables were collected on 25 ares sample plots. After running through a multivariate analysis that gave 9 statistical groups, a map of the area was drawn, showing the spatial distribution of these groups. Altitude, geomorphology and slope opposition are responsible for the groups distribution.
Key-words: Subnatural forest, spatial structure, quantitative description, qualitative description, multivariate analysis

Schnitzler A. (1988): Phytosociologic typology, ecology and dynamics of alluvial forests in the geomorphologic complex Ill-Rhine (central plain of the river Rhine). (Typologie phytosociologique, écologique et dynamique des forêts alluviales du complexe géomorphologique ello-rhénan (plaine rhénane centrale)
Ph. D. thesis, Strasbourg University
Key-words: Typology, forest dynamics, ecology, alluvial forest, river plain, Rhine valley

Schnitzler A. (1997): River dynamics as a forest process : interaction between fluvial systems and alluvial forests in large European river plains. The Botanical review 63/1, 40-64
Abstract: The paper corresponds to an overview of the impacts of the inundations on gallery forest processes, with examples of the upper Rhine valley, France. The geomorphic pattern of big river plains, the particularities of the nutrient cycle, the adaptations of the Flora, the specificities of the sylvigenetic cycles are detailed, with examples of the upper Rhine valley.
Key-words: Forest dynamics, river dynamics, alluvial forest, river plain, Rhine valley

Walter J.M.N (1991): A quick overview of the protection status and the dynamic of ancient and subnatural forests in Europe (Bref aperçu du statut et de la dynamique des forêts anciennes et semi-naturelles d'Europe)
Revue Forestière Française 83, numéro spécial "Patrimoines naturels forestiers", 173-184
Key-words: Forest dynamics, natural forest, history, protection status

Walter J.M.N (1979): Study of the spatial structures in Rhine alluvial forests (I) (Etude des structures spatiales en forêt alluviale rhénane (I))
Acta Oecologica, Oecol. Plant. 14/3, 345-353
Key-words: Typology, forest dynamics, spatial structure, alluvial forest, river plain, Rhine valley