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Index of Biodiversity Potential (IBP): for estimating the potential of forest stands for biodiversity

P. Gonin¹, L. Larrieu¹,², M. Deconchat²

¹CNPF
²INRA UMR Dynafor

GoProFOR LIFE – Florence (Italie) le 30/10/18
Elaboration of IBP in 2008

**Context**

- **need for a practical tool** to take forest biodiversity into account in daily management:
  - simple & fast tool
  - does not require taxonomical knowledge or complex measurements
  - identifying the factors which can be improved

- knowledge of **stand key features for biodiversity**
IBP (Larrieu & Gonin, 2008): capacity of forest stands to support common taxonomic biodiversity → indirect indicator
IBP: a composite indicator

A - Native tree species
B - Vertical structure
C - Large standing deadwood
D - Large downed deadwood
E - Very large living trees
F - Living microhabitat-bearing trees
G - Openness

Vegetation

7 factors directly related to management (max. total value = 35 points)

Tree-related microhabitats

Forest-associated macrohabitats
3 factors rather concerning the context
(max. total value = 15 points)

H – Continuity of woody state
I - Aquatic habitats
J - Rocky habitats

Forest-associated macrohabitats
Scoring system: 0, 2 or 5 for each factor

Ex. factor B « Vertical structure »

4 canopy layers to be observed (≥ 20 %)
- for ligneous, layers occupied by foliage:
  - high > 15 m*
  - intermediate 5-15 m*
  - low < 5 m*
- herbaceous and semi-ligneous
  (*thresholds for the Mediterranean region)

Notation:
- 1 & 2 layers → score 0
- 3 layers → score 2
- 4 layers → score 5
Survey methods: standardized & adapted to different contexts

Diagnose of a stand

- Full run
- Partial run
- Systematic sampling run

Diagnose of stand types of or a large stand

Transect sampling
To help using the IBP method

A flyer about notation methods, Field sheet

Spreadsheet: registration & edit

Internet site
www.foirepriveefrancaise.com/ibp
From IBP to practical recommendations

IBP

several possible recommendations
IBP # management norm

Objectives

Forest management

Context: socio-economic, regulatory framework, type of property...

Features of the forest: site conditions, stand, environment, equipment…
IBP: domain of validity

- **Geographical**

  France: 2 versions according to the biogeographical regions

  - Atlantic & continental lowland, montane & sub-alpine levels
  - Mediterranean supra + meso-Mediterranean (montane: idem atlantic & continental domain)

- **Vegetation at the forest stage - from regeneration to adult stands**
  → other vegetations excluded (e.g. mattoral)

- **A part of biodiversity**
  → complementarity with others assessments: naturalness, state of habitat conservation, sustainable management...
IBP for comparison of stands biodiversity

Ex. : *Quercus ilex* : adult stand    mature stand

Field notation & IBP calculation

<table>
<thead>
<tr>
<th>Management factors</th>
<th>Context factors</th>
<th>Total</th>
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<tr>
<td>A Native tree species</td>
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<td>B Vertical structure</td>
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<td>G Openness</td>
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<td>74 % (26/35)</td>
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<td>100 % (35/35)</td>
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Ex. : *Quercus ilex* : adult stand    mature stand
A synthetic representation helping interpretation

1 : adulte stand

2 : mature stand

factors to be improved
IBP for a biodiversity overview at the forest level

In a small forest (55 ha)

Scores per stand

Scores per factor

Stand with a high biodiversity potential

Stand with a low potential biodiversity

Do not calculate the IBP average!

Source: Barbazanié forest (France, 81)
CRPF Occitanie
In a larger forest (313 ha)

Systematic sampling, 1 plot / ha
Factors: Large deadwood, standing • downed •
Very large living trees •

circles proportional to the number of trees within the plot

relevant set-aside plots
spatial discontinuity of VLT and deadwood

elements useful for forest planning

Source: Forêt de la Combe d’Aillon, Parc naturel régional du massif des Bauges (France, 74)
IBP: an educational tool

Biodiversity training & technical meetings

Training support
Training program
Documentation

Demonstration network

IBP - facteurs liés au peuplement et à la gestion forestière
Essences forestières
Structure verticale de la végétation
Bois mort sur pied de grosse circonférence
Bois mort au sol de grosse circonférence
Très gros bois vivants
Arbres vivants porteurs de dendromicrohabitats
Milieux ouverts

Plot in a Quercus pubescens stand
A co-built & evolving tool thanks to the R&D program.

Expressed needs + New knowledge + possible improvements

french national IBP Research & Development program

INRA UMR Dynafor  Centre national de la propriété forestière

Team IBP

Users

Scientists

Funders

French national strategy for biodiversity

National steering committee
Current situation

A recognized tool

- In France: inscribed in the French national strategy for biodiversity
- In other countries:
  - Spain: project Life BIORGEST (Catalonia)...
  - Locally used in Switzerland, Belgium, Germany
  - Contacts with other countries: Morocco, Algeria, Lebanon...
- Relation with AIFM (International Association for Mediterranean Forests)
Diverse and numerous users

- **Production forests**: managers, forestry consultants, logging company, owners
- **Areas dedicated to conservation**: national parks, regional parks, reserves...

Many ways to use it

- Biodiversity overview before intervention or management plan
- Identification of common biodiversity issues
- Territorial analysis
- Educational tool

More than 2 thousand IBP
IBP in Italy?

Features of the extension
- Stand, bioclimatic & site conditions similar to France: minor adaptations
- Very different context: the Mediterranean version to be completed or new version
- Methodology of extension (see paper IBP 5th Med. Forest Week: Gonin, Larrieu Deconchat 2017)

Goprofor project
- Translation of documents with adaptation
- Development of a training module

Thank you for your attention