



# Annual Report 2009

**IFER** - Institute of Forest Ecosystem Research  
- Monitoring and Mapping Solutions

Authors of Annual Report:

Jana Beranová, Petr Vopěnka, Šárka Holá and Veronika Lukášová with the assistance of other colleagues from IFER

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The photographs were made during business trips in Vietnam within the project of foreign developmental cooperation.

## Foreword



Fifteen years. That much time passed this year from the foundation of IFER – Institute of Forest Ecosystem Research, and it is therefore a proper thing to look back not only at this year but at the whole period of IFER's existence.

If it is a truth that 95% of small and medium-sized companies do not survive the fifth year of their life in the European Union (Ekonom 26/2008), than a crucial success is the fact that we are here after the time three times as long and we do not intend to end up. We succeed in keeping the long-term trend of the diversification of customers and financial resources with the increasing share of those from abroad, and to maintain at the same time our professional focus. We stick to our last in the field of forest and landscape production ecology and we build IFER as a research and engineering firm with a long-term concept. Projects of applied and basic research assigned by Ministry of the Environment

of the Czech Republic (MŽP ČR), Ministry of Agriculture of the Czech Republic (MZe ČR), Grant Agency of the Czech Republic (GAČR), EU framework programmes, JRC, Irish COFORD and other clients are combined with services provided to various other users by supplying complex technologies for the computer-aided collection of field data. A great success of the last period I consider the increasing number of jobs assigned directly by private forest owners and forest managers.

Year 2009 was another year of very intensive work, a year of creative concentration, in which we - turned in - focused on the accumulation of research results, on the creation of new products and types of services.

We can but believe that in the coming year, in the year of presentations, exhibitions and application projects in a number of countries, our experience and research results will find use.

Ing. Martin Černý, CSc.  
CEO

## Characterization, identification and history of the companies

IFER - Institute of Forest Ecosystem Research, s.r.o., is an independent, private, research organization. Core activities of the company are focused primarily on forest production ecology, monitoring of forest health condition, methods of statistical forest inventory, forest management planning, wildlife ecology, balance of carbon and other substances in ecosystems, etc. IFER is capable of independent work at research tasks in these fields on the basis of current assignments of customers from amongst the Czech and foreign forest owners and managers, ministries, state administration and self-governments, European Union or other international organizations and institutions. IFER is functioning with no basic budget or institutional contribution; its existence depends exclusively on the receipts from individual projects.

The history of the Institute of Forest Ecosystem Research dates back to the beginning of year 1992 when a group of four colleagues made a decision to leave the Research Institute of Forest and Game Management (VÚLHM Jíloviště-Strnady) and to start independent work. In 1994, the group founded a limited company IFER s.r.o. and in 1996, the company's seat was moved to Jílové u Prahy.

During its existence, IFER gained a lot of theoretical knowledge as well as practical experience which facilitate a long-term development of the methodology of statistical forest inventory and a closely linked complex technology of computer-aided collection and processing of field data – Field-Map. The development and subsequent trading with

the Field-Map technology was assigned to a spin-off limited company IFER – Monitoring and Mapping Solutions, s.r.o. founded for the purpose in 2005.



### **IFER - Institute of Forest Ecosystem Research, s.r.o.**

The company was established 18 May 1994 and is listed in the Company Register at the Regional Court in Plzeň, Part C, Insert 5091.

Place of business:  
Areál 1. Jílovské a.s.,  
254 01 Jílové u Prahy,  
Czech Republic

Registered office:  
Strašice 299,  
338 45 Strašice,  
Czech Republic

Company registration number: 00883921

Tax identification number: CZ00883921

[www.ifer.cz](http://www.ifer.cz)

### **IFER - Monitoring and Mapping Solutions, s. r. o.**

The company was established 24 May 2005 and is listed in the Company Register at the Regional Court in Plzeň, Part C, Insert 17306.

Place of business:  
Areál 1. Jílovské a.s.,  
254 01 Jílové u Prahy,  
Czech Republic

Registered office:  
Strašice 299,  
338 45 Strašice,  
Czech Republic

Company registration number: 26391040

Tax identification number: CZ26391040

[www.field-map.com](http://www.field-map.com)

## Activities

From its foundation until today, IFER – Institute of Forest Ecosystem Research resolved more than 220 research projects from purely domestic assignments through international projects up to those resolved and implemented abroad only. IFER can resolve research tasks falling into the sphere of basic research as well as practice-oriented technical jobs. In the last few years, IFER’s portfolio of activities was extended by tasks falling into the sphere of decision- and policy-making (e.g. expert counselling for state administration or ministries, preparation of documents for agendas relating to international conventions, etc.).

The centre of IFER’s activities lies in forestry, at all levels of the science - forest operations (logging, silviculture, etc.), forest management, monitoring of protected areas, forest policy, administration of databases and development of computer programmes for the forest industry. IFER has been long dealing also with the issue of climate change and with the related monitoring of carbon stock and inventory of the emissions of greenhouse gases. At present, IFER intends to focus more on forest inventory programme support and enquiry into the production potential of the forest.

The background of theoretical knowledge and practical experience in all these disciplines made it possible for the Institute of Forest Ecosystem Research to develop on a long-term basis a methodology for the statistical forest survey on the principle of which dwell today the solutions of most its research projects. For the needs of forest inventory, IFER developed and continually improves a complex technology for the collection of field data and their subsequent processing – Field-Map. The scope, process and goals of the inventory vary across the range of IFER’s projects and this is why the activities and projects which currently stand in the centre of IFER’s attention can be divided into following groups.





### **Volume measurement and grading of standing trees**

The determination and finding of effective procedures enabling to identify stem volume and individual assortments in standing trees is one of basic mensurational tasks and the theme is one of pivotal issues resolved by IFER from its foundation until these days. At the beginning of its existence, IFER succeeded in developing yield tables and growth models for MZe ČR. The experience is currently capitalized in the development and application of methods for standing crop grading. A great experience in this sense was cooperation with VLS s.p. (Military Forests and Farms, State enterprise) in 2007-2009, for which IFER developed a programme support for grading the volume of timber to be felled in a certain year, which is in full operation today.

### **Monitoring of forest reserves**

In the period from 1994-2004, IFER designed and administered for MZe ČR an information system on forests based on a pattern of pilot research plots (PRP) and permanent sample plots (PSP). The gained experience enables IFER to design procedures for the establishment and monitoring of control plots for various institutions, e.g. LČR, s.p. (Forests of the Czech Republic, State enterprise), SCHKO ČR – today Agency for Nature Conservation and Landscape Protection, MŽP ČR etc. and to collaborate with

international organizations such as Alterra in Wageningen (Netherlands), University of Lund (Sweden), Forest Research Institute of Malaysia, ANB – Agentschap voor Natuuren Bos (Belgium) and others.

### **Forest health assessment**

Important projects in the history of IFER include e.g. the formulation of forest and soil management principles with respect to long-term acidification, nutritional degradation and eutrophication of forest soils or to the zoning of forest soils in the Czech Republic in relation to their acidification and nutritional degradation. On a long-term basis IFER dealt with the programme for monitoring the health condition of forest stands at regional level (NP Šumava, KRNP, NP Podyjí, Beskydy, Jeseníky and Brdy). In 2009, a project was launched titled Forest adaptation strategy for the changing environment in conditions of the Moravian-Silesian Beskids (LASPROBES) to survey the condition and dynamics of forest stands in the region.

### **Assessment of wildlife impact on the forest**

IFER has been dealing with the issue of wildlife impact on the forest: since 1995, national inventory of game damages has been conducted in five-year intervals (1995, 2000, 2005). In 2009, preparatory

works were carried out for the fourth replication of the complete cycle of measurements which are to be made this year. In 2006 and 2009, IFER carried out the inventory of game damages also for VLS, s.p. in all its divisions. The portfolio of services provided by IFER in this field was in 2009 added a project for expert valuation of game damages in the Aglaia game preserve.

### **Forest management**

In the past years, IFER participated in the practical employment of new forest management methods - e.g. in the elaboration of Forest Management Plan for the NP Podyjí or at the operational inventory of working-plan areas in the NP Šumava. The method has been successfully used in foreign projects too - e.g. in the evaluation of the state of forests in the locality of Nizhniy Bystriy in Ukraine. Within the project of foreign developmental cooperation, IFER helps the Ukrainian Lesprojekt in building an information system on forests. Forest management is also in the scope of the MOTIVE project which has been launched recently and seeks suitable forest management strategies in conditions of the changing environment. At present, IFER intensively works on the development of technological support for enumeration survey in forest establishments.

### **Carbon stock monitoring**

IFER developed a methodology of carbon stock monitoring for the FACE Foundation, which was subsequently verified in several inventory campaigns in national parks of Uganda (2003, 2008) and Malaysia (2007). In Malaysia, the measurements will continue in 2010. Important projects dealing with the quantification of carbon stock and its cycle in ecosystems included CzechCarbo (MŽP ČR) or CARBOINVENT (EU). The solution of a new project

CZECHFORSCEN - Contribution of the forest sector in the balance of emissions in the Czech Republic and model prediction of forest management scenarios in the Czech Republic relates to this issue as well.

### **Emission inventories and modelling**

Since 2006, IFER continually works on the inventory of GHG emissions and sinks within the framework of National Inventory System (NIS) for the sectors of „Agriculture“ and „Land use, land use change and forestry“ (LULUCF). In 2003-2005, Grant Agency of the Czech Republic funded the regional quantification of carbon stock and modelling of its development in connection with commitments of the Kyoto protocol. Apart from the inventory and monitoring, IFER tackles analytical projects and scenario modelling.

### **Inventory of forests and landscape at national and regional levels**

One of the most important activities of IFER is development and application of methods for the inventory of forests and landscape. Since the elaboration of methodology for a large-scale forest inventory in the Czech Republic in 1994-2000, the scope of activities included technological and methodological support not only to Czech national forest inventory but also to national forest inventories in Ireland, Hungary, Austria, Slovakia, Cape Verde Islands, Russia, Island, Flanders or Ukraine. Forest survey methods are further used in operational regional inventories and regional identification of the state of forests in the Czech Republic, Switzerland, Germany, Poland, Vietnam and in several countries of Latin America. Principles of statistical inventory serve for example as a basis for the methodology of „national landscape inventory“ employed in the extensive CzechTerra project.



## Projects solved in 2009

- Technological and methodological support to the National Forest Inventory (NFI) of Russian Federation (GIL RF)
- Reporting for the inventory of GHG emissions and sinks within the framework of National Inventory System (NIS) for the sectors of „Land use, land use changes and forestry“ (LUCF/ LULUCF) and „Agriculture“
- Sector LULUCF and its contribution to the Kyóto Protocol commitments in the Czech Republic
- MASCAREF – Study under the EEC 2152/2003 Forest Focus regulation on developing harmonized methods for assessing carbon stock quantification in European forests
- CzechTerra – adaptation of landscape carbon reservoirs in the context of global change (SP/2d1/93/07)
- Operational statistical inventory – National Park Šumava, Forest District Borová Lada
- Inventory of game damages – Czech Republic
- Collaboration in the field of forest ecosystems inventory (Ukraine) – TechnLes II.
- Distribution of common yew in the Czech Republic with respect to its ecological amplitude, evaluation of risk factors and preparation of a complex proposal of measures for the protection of this severely threatened species.
- Forest regeneration and sustainable development of forests in the community of Phong My, Vietnam
- EFORWOOD - Tools for sustainability impact assessment of the Forestry-Wood chain
- Surveying of springs in Prague (City Council Prague)
- Introduction of environment-friendly management according to FSC standard in the Czech Republic
- Inventory of game damages for VLS (Military Forests and Farms)
- Models for adaptive forest management – MOTIVE
- Assessment of timber reserve value in the forests of Jindřichov community with the use of operational forest inventory and grading model
- Evaluation of game damages in the Aglaia game preserve
- LASPROBES - Forest adaptation strategy for the changing environment in conditions of the Moravian-Silesian Beskids
- Surveying of tree stems in the flow of the Odra River
- Establishment of stand composition on the research plots of LFE Eberswalde
- Technological support in forest surveys – Internal R & D project
- Technological and methodological assistance to forest inventory in Flanders (Belgium)
- Technological and methodological assistance in surveying the state of forests in Ukraine
- Technological and methodological assistance in data collection on research plots in Switzerland
- Technological and methodological assistance at National Forest Inventory in Cape Verde
- Technological and methodological assistance at Hungarian National Forest Inventory
- Technological and methodological support in surveying the state of forests in South America
- Technological and methodological assistance at National Forest Inventory in Ireland
- Technological and methodological support in surveying the state of forests in Poland
- Technological and methodological support in surveying the state of forests in Croatia
- Technological and methodological support in surveying the state of forests in France



## Publications in 2009

Černý, M., Apltauer, J., Oujezdský, P. (2009). Programme support in grading the timber volume to be felled /in Czech/. *Lesnická práce* 88(9):589-591

Tatarinov, F.A., Cienciala, E. (2009). Long-term simulation of the effect of climate changes on the growth of main Central-European forest tree species. *Ecological Modelling* 220: 3081–3088

Exnerová, Z., Cienciala, E. (2009). Greenhouse gas inventory of agriculture in the Czech Republic, *Plant Soil and Environment* 55(8):311-319

McRoberts, R.E., Tomppo, E., Schadauer, K., Vidal, C., Ståhl, G., Chirici, G., Lanz, A., Cienciala, E., Winter, S., Smith, W. B. (2009). Harmonizing National Forest Inventories. *Journal of Forestry*, 107(4):179-187

Frouz, J., Pizl, V., Cienciala, E., Kalcik, J. (2009). Carbon storage in post-mining forest soil, the role of tree biomass and soil bioturbation. *Biogeochemistry* 94(2):111-121

Fanta, J., Křenová, Z. (2009). Forest Management of Czech National Parks. Proceedings of the workshop held in Krkonose National Park, October 9-11, 2008

Miko, L., Hošek, M. [eds.] (2009). Nature and Landscape in the Czech Republic. Report 2009. The Agency for Nature Conservation and Landscape Protection of the Czech Republic, p. 102 /in Czech/. ISBN 978-80-87051-70-2

Merganič, J., Russ, R., Beranová, J., Merganičová, K. (2009). Assessment of the Impact of Deer on the Diversity of Young Trees in Forest Ecosystems in Selected Localities of the Czech Republic. *Ekológia* 28(4): 432-445

Němec et al. (2009). Forests in the Czech Republic /in Czech/. ISBN 80-903482-5-4



## Presentations, conference proceedings and other reports in 2009

- Beranová, J. (2009): Inventory of game damages on the forest property /in Czech/. Annual report to project of the same name.
- Beranová, J. (2009): Inventory of game damages in forest stands of the individual divisions of Military Forests and Farms, State enterprise /in Czech/. Annual report to project of the same name.
- Beranová, J., Rezek, M. (2009): Review of requirements stipulated by the Czech FSC Standard. Presentation at the Czech-Norwegian conference on FSC forest certification, 24 Nov. 2009, Prague
- Zatloukal, V. (2009): Methodology for the management of common yew population in the nature reserve V Horách (Terešov yews) and in the surrounding area in respect of strengthening the population in the concerned territory and protection of the gene pool of this severely threatened tree species /in Czech/. Partial output from the Project SP/2d4/31/07
- Zatloukal, V. (2009): Methodology for the management of common yew population in the Moravian Karst Protected Landscape Area /in Czech/. Partial output from the Project SP/2d4/31/07
- Zatloukal, V. (2009): Methodological recommendations following out from the field survey within the framework of MŽP Project SP/2d4/31/07 concerning the issue of the gene pool protection of „Libotín yews“ in the region of Nový Jičín /in Czech/.
- Černý, M., Cienciala, E., Beranová, J. (2009): Incorporation of internationally harmonized forest inventory procedures into methods of National Forest Inventory in the Czech Republic /in Czech/. Final report to the Project 1P05OC080
- Exnerová, Z. (2009): Preliminary projections of GHG emissions and sinks from the sector of agriculture for years 2010, 2015 and 2020 for the purpose of reporting according to Article 3.2 of the Commission Decision no. 208/2004/EC /in Czech/.
- Černý, M. (2009): Operational statistical forest inventory, Working-plan area Srní 2008 /in Czech/.
- Černý, M., Cienciala, E., Beranová, J. (2009): CzechTerra – Report for year 2008 /in Czech/.
- Beranová, J., Russ, R. (2009): Pilot Study on the Use of National Forest Inventories to Downscale European Forest Diversity Spatial Information in Five Test Areas Covering Different Geo-Physical and Geo-Botanical Conditions (Final Report).
- Černý, M., Apltauer, J., Podhrázká, P. (2009): Assessment of timber reserve value in the forests of Jindřichov community with the use of operational forest inventory and grading model /in Czech/. Final Report to project of the same name.
- Zatloukal, V. (2009): Distribution of common yew in the Czech Republic with respect to its ecological amplitude, evaluation of risk factors and preparation of a complex proposal of measures for the protection of this severely threatened species /in Czech/. SP/2d4/31/07, 3Q2009.
- Beranová, J., Blažek, P., Černý, M. (2009): Forest regeneration and sustainable development of forests in the community of Phong My, Vietnam /in Czech/. Annual report of subcontractor to the Project MZe/B/12 for 2009.
- Černý, M. (2009): CZECHTERRA – Adaptation of landscape carbon reservoirs in the context of global change – Development of dynamic observation network to provide information on the condition and development of ecosystems and land use (PS3) /in Czech/. Report to project of the same name.
- Vopěnka, P. (2009): Methodological excerpt of Project VaV/640/03/03 „Zoning of forest soils in the Czech Republic as related to their acidification and nutritional degradation“ modified for the purposes of Project VaV SP2e3 /in Czech/.
- Cienciala, E., Apltauer, J. (2009). National Greenhouse Gas Inventory Report, Chapter 7 LULUCF, NIR (reported inventory 2007), CHMI Praha, 2009 ([http://unfccc.int/national\\_reports](http://unfccc.int/national_reports))
- Exnerová, Z. (2009). National Greenhouse Gas Inventory Report, Chapter 6 Agriculture, NIR (reported inventory 2007), CHMI Praha, 2009 ([http://unfccc.int/national\\_reports](http://unfccc.int/national_reports))
- Cienciala, E., Exnerova, Z., Baritz, R., Bird, N., Blujdea, V., Bouriaud, O., Brus, D., Colin, A., Freudenschuß, A., Grassi, G., Armolaitis, K., Marin, G., Matteucci, G., Nabuurs, G-J., Mixopoulos, P., Petersson, H., Priwitzer, T., Radoglou, K., Reuter, H., Riek, W., Ståhl, G., Walvoort, D., Weiss, P., Van den Wyngaert, I., Zanchi, G., Zerva, A., Zirlewagen, D. (2009). Study under EEC 2152/2003 Forest Focus regulation on developing harmonized methods for assessing carbon sequestration in European forests (Final Technical Report)

## Courses and staff training in 2009

Date	Institution	Country	Supervisor	Subject matter
19-31 January	Ishan Tech	Malaysia	Petr Blažek Petr Muller	FM promotion
19-28 January	Ukrlesprojekt	Ukraine	Martin Černý	TechInLes II
25-28 January	Ukrlesprojekt	Ukraine	Martina Roubalová	TechInLes II
2- 4 February	Roslesinforg	Russia	Martin Černý	GIL Conference
14 Feb - 1 March	ONF, IFN, INRA, CEMAGREF, RNF, FRM France a.o.	France	Petr Muller Anne-Laure Pecheur	FM promotion
15-19 February	University of Zagreb	Croatia	Radek Russ Radim Seydl	FM training
1-8 March	DRS	U.S.A.	Petr Blažek	Training in DRS
2-7 March	Roslesinforg	Russia	Petr Vopěnka Pavel Moravčík Pavel Málek	Technology transfer
17-28 March	FIPI	Vietnam	Petr Blažek	ZRS Project
22 April	ČTU Prague	CR	Petr Vopěnka	Presentation
30 Apr - 16 May	Ministry of Forestry, Faculty of Forestry, CENARES, ANPN, FRM a.o.	Gabon	Petr Vopěnka Petr Muller	FM promotion
10-11 May	Bavaria NP	Germany	Radek Russ	FM training
11-15 May	KRNAP	CR	Radim Seydl Radek Russ Pavla Podhrázká	FM training
2-3 July	TU Zvolen	Slovakia	Radim Seydl	FM promotion
13 July - 1 August	Roslesinforg	Russia	Petr Vopěnka Pavel Moravčík Radek Russ	GIL controls
2-23 August	Roslesinforg	Russia	Petr Vopěnka	GIL controls
3-7 August	Ukrlesprojekt	Ukraine	Petr Blažek Jan Apltauer	TechInLes II
17-28 August	Roslesinforg	Russia	Radek Russ	GIL controls
1-13 September	DGASP	Capo Verde	Petr Blažek Radek Russ	FM training
12-16 October	ANB Brusels	Belgium	Martin Černý Petr Blažek	FM training
21-25 October	University of Charkov	Ukraine	Martina Roubalová Petr Blažek	TechInLes II Conference

# Field-Map Technology Users



