

E7.1 Temperate wooded pasture and meadow

Summary

This habitat includes a wide variety of landscapes across the nemoral zone of Europe where diverse traditions of grazing, mowing and silviculture have together created distinctive associations of trees growing among pastures and meadows. Unlike most other Red List habitats, this is a landscape-scale mosaic of different kinds of grasslands, scrubs and forests. Such wood-pastures, wooded steppes, park meadows, grazed orchards, parklands and open hunting forests, variously managed for stock rearing, hay production, coppice and timber products, represent highly distinctive social and economic histories and can express great cultural traditions. Species-rich types occur, including contingents of epiphytic plants growing on veteran trees but, even where the components are more commonplace, the combinations of floristic and structural elements are striking. The disintegration of traditional patterns of land use and shifts to other kinds of cropping have led to enormous losses in extent and quality across much of Europe and restoration faces the challenge of again developing forms of integrated management at landscape scale.

Synthesis

The habitat qualifies as Vulnerable (VU) on the basis of the losses in the recent past, frequently matched by longer term historical decline in extent.

Overall Category & Criteria			
EU 28		EU 28+	
Red List Category	Red List Criteria	Red List Category	Red List Criteria
Vulnerable	A1	Vulnerable	A1

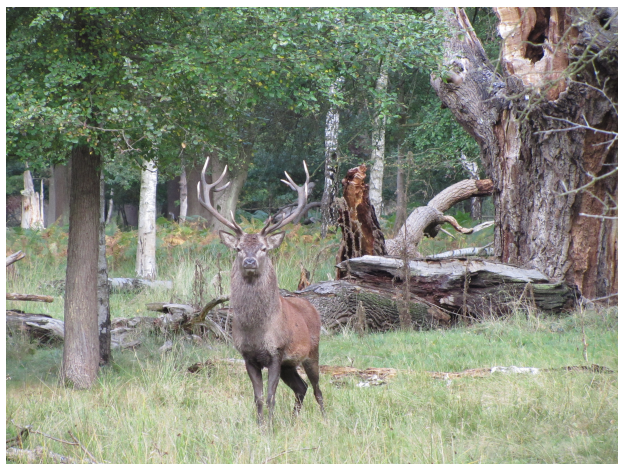
Sub-habitat types that may require further examination

There are many regional and local sub-types related to differences in climate and particular grazing and silviculture traditions. These are variously threatened by changes in different patterns of land-use.

Habitat Type

Code and name

E7.1 Temperate wooded pasture and meadow



Red deer stag and veteran oak in Windsor Great Park, United Kingdom (Photo: Keith Kirby).



Beech-hornbeam-oak wooded pasture on Transylvania, Romania, still managed in a traditional way by the local community (Photo: Anna Varga).

Habitat description

These are open wooded landscapes created and maintained through traditional grazing, hay-making and silviculture. The wooded pastures are typical of the lowlands, hills and mountains throughout the nemoral zone, the wooded meadows mostly found in the mountains and riparian areas of Central Europe. Regional variations in climate and terrain, in purpose and origin, land use and disturbance regime make this habitat very diverse and dynamic with structure and species composition strongly influenced by the landowners and farmer/herders. Due to their semi-open character and their landscape scale, they can accommodate numerous species, many of which are rare and endangered. Other types are relatively species-poor with widely distributed components, but here combined in highly distinctive ways. Traditional wooded pastures and meadows characteristically express the locally distinctive social and economic history and are therefore of considerable cultural significance like high nature value farmland.

Deciduous trees are the usual canopy dominants, particularly *Quercus robur*, *Q. petraea* and *Fagus sylvatica* but also commonly *A. campestris*, *A. platanoides*, *Acer pseudoplatanus*, *Alnus glutinosa*, *Betula pendula*, *Carpinus betulus*, *Castanea sativa*, *F. angustifolia*, *Fraxinus excelsior*, *Populus alba*, *Populus nigra*, *Pyrus pyraeaster*, *Salix* spp., *Sorbus torminalis*, *Tilia cordata*, *T. tomentosa*, and *Ulmus glabra*. Typical coniferous trees are *Pinus* spp., *Picea abies* and *Larix decidua*. The spatial arrangement of trees may be close to a regular pattern, where the trees were deliberately planted, sparsely distributed under traditional management or, in ornamental parklands, arranged by landscape design. Individual trees may be of very great age and pollarded veterans can be a distinctive feature.

The open canopy can allow the establishment of a diverse understorey but grazing and/or mowing may largely prevent the development of saplings and shrubs. The species and their density depend on site characteristics, local tradition and management regimes but the most typical smaller trees and shrubs are *Crataegus laevigata*, *C. monogyna*, *Cornus mas*, *Corylus avellana*, *Cytisus scoparius*, *Euonymus europaeus*, *J. oxycedrus*, *Juniperus communis*, *Ligustrum vulgare*, *Prunus spinosa*, *Rosa* spp., *Rubus canescens* with *Calluna vulgaris* a common sub-shrub. The composition of the herb layer depends on regional climate and terrain conditions as well as on the kinds of grazing and hay-making. The main herbs are grassland generalists such as species of *Dactylis*, *Lolium*, *Medicago* and *Trifolium* but plants more or less exclusive to silvipastoral habitats are poisonous taxa such as *Asphodelus* spp., *Dictamnus albus*, *Helleborus* spp., *Paeonia* spp., *Pulsatilla* spp. and *Veratrum nigrum*.

Old-growth and scrub- and coppice- wooded pastures, grazed orchards, meadow orchards have many different sub-types in the nemoral region, including the following: nemoral deciduous *hudewald* or park of lowland to submontane Fagetalia landscapes in western and central Europe; montane to subalpine deciduous, coniferous or mixed pastoral woodland or *Weidfeld* dominated by *Fagus*, *Picea* or *Acer* in the mountains of central, southern and southeastern Europe; nemoral lowland deciduous *hudewald*, park; thermophilous deciduous *hudewald* of colline to montane Quercetalia pubescentis landscapes in southern, south-east and south-central Europe; deciduous riparian and lowland *hudewald* with flooding regime of the great river basins, chiefly in eastern and south-eastern Europe; montane to subalpine coniferous pastoral woodland dominated by *Pinus* or *Larix* in the high mountains of temperate Europe; montane to altimontane coniferous or mixed *Pinus* and *Abies* wood-pasture of the mountains of the wider Mediterranean region; *Wacholderheide* pastures wooded with *Juniperus communis* of Fagetalia and Quercetalia roboris landscapes in lowland to montane north-western and central Europe; thermophilous deciduous coppice wood-pasture of Quercetalia pubescentis landscapes in southern and south-eastern Europe; subcontinental shibliak distributed in pastures of wood-steppe and Quercetalia pubescentis regions in south-eastern and south-east central Europe; submediterranean shibliak distributed in Quercetalia pubescentis regions of southeastern Europe; rangelands with tall juniper in southern and southern central European mountains, more widely distributed in Anatolia, the Black Sea area and the Middle East; ancient aristocratic parklands and royal hunting forests in England.

Indicators of quality:

- Abundance of old-growth, veteran trees
- Regeneration of open-growth trees
- Regular and deliberate management maintaining high nature and cultural value as well as agricultural value
- Little regeneration of the woody element and no scrub encroachment over the grassland
- No decrease in grazing pressure or frequency of mowing
- No land-use intensification such as removal of the structural elements to extend the grassland, use of fertilizer and artificial seeding, increase of livestock density
- No spread of non-native trees from planted stock or naturally invasive sources

Characteristic species:

Canopy vascular plants: *A. campestre*, *A. platanoides*, *Acer pseudoplatanus*, *Alnus glutinosa*, *Betula pendula*, *Carpinus betulus*, *Castanea sativa*, *Fagus sylvatica*, *Fraxinus angustifolia*, *F. excelsior*, *Larix decidua*, *Picea abies*, *Pinus cembra*, *P. uncinata*, *Populus alba*, *Populus nigra*, *Prunus avium*, *Pyrus pyraeaster*, *Quercus robur*, *Q. petraea*, *Salix* spp., *Sorbus torminalis*, *Tilia cordata*, *T. tomentosa*, *Ulmus glabra*.

Understorey: *Crataegus laevigata*, *C. monogyna*, *Cornus mas*, *Corylus avellana*, *Cytisus scoparius*, *Euonymus europaeus*, *J. oxycedrus*, *Juniperus communis*, *Ligustrum vulgare*, *Prunus spinosa*, *Rosa* spp., *Rubus canescens*.

Field layer vascular plants: *Asphodelus* spp., *Calluna vulgaris*, *Cytisus scoparius*, *Dactylis* spp., *Dictamnus albus*, *Helleborus* spp., *Lolium* spp., *Medicago* spp., *Paeonia* spp., *Pteridium aquilinum*, *Pulsatilla* spp., *Trifolium* spp., *Veratrum nigrum*.

Epiphytic cryptogams: species of *Evernia*, *Fuscopannaria*, *Ochrolechia*, *Parmelia*, *Pertusaria*, *Physcia*, *Physconia*, *Ramalina*, *Schistmatomma*, *Antutrichia curtispindula*, *Leucodon sciuroides*, *Neckera complanata*, *N. crispa*.

Classification

This habitat may be equivalent to, or broader than, or narrower than the habitats or ecosystems in the following typologies.

EUNIS:

X09 Pasture woods (with a tree layer overlying pasture)

EuroVegChecklist:

Wood pastures and wooded meadows have rarely been described in relation to phytosociological units. This habitat has floristic affinities to various orders of plant communities including *Quercetalia roboris*, *Fagetalia*, *Vaccinio-Piceetalia*, *Quercetalia pubescentis*, *Salicetalia albae* and *Pino-Juniperetalia* alliances.

Annex 1:

-

Emerald:

E7.1 Atlantic parkland

MAES-2:

-

IUCN:

-

Does the habitat type present an outstanding example of typical characteristics of one or more biogeographic regions?

No

Justification

It is a widespread type throughout the nemoral zone whose general characteristics relate more to long histories of combinations of grazing and silviculture.

Geographic occurrence and trends

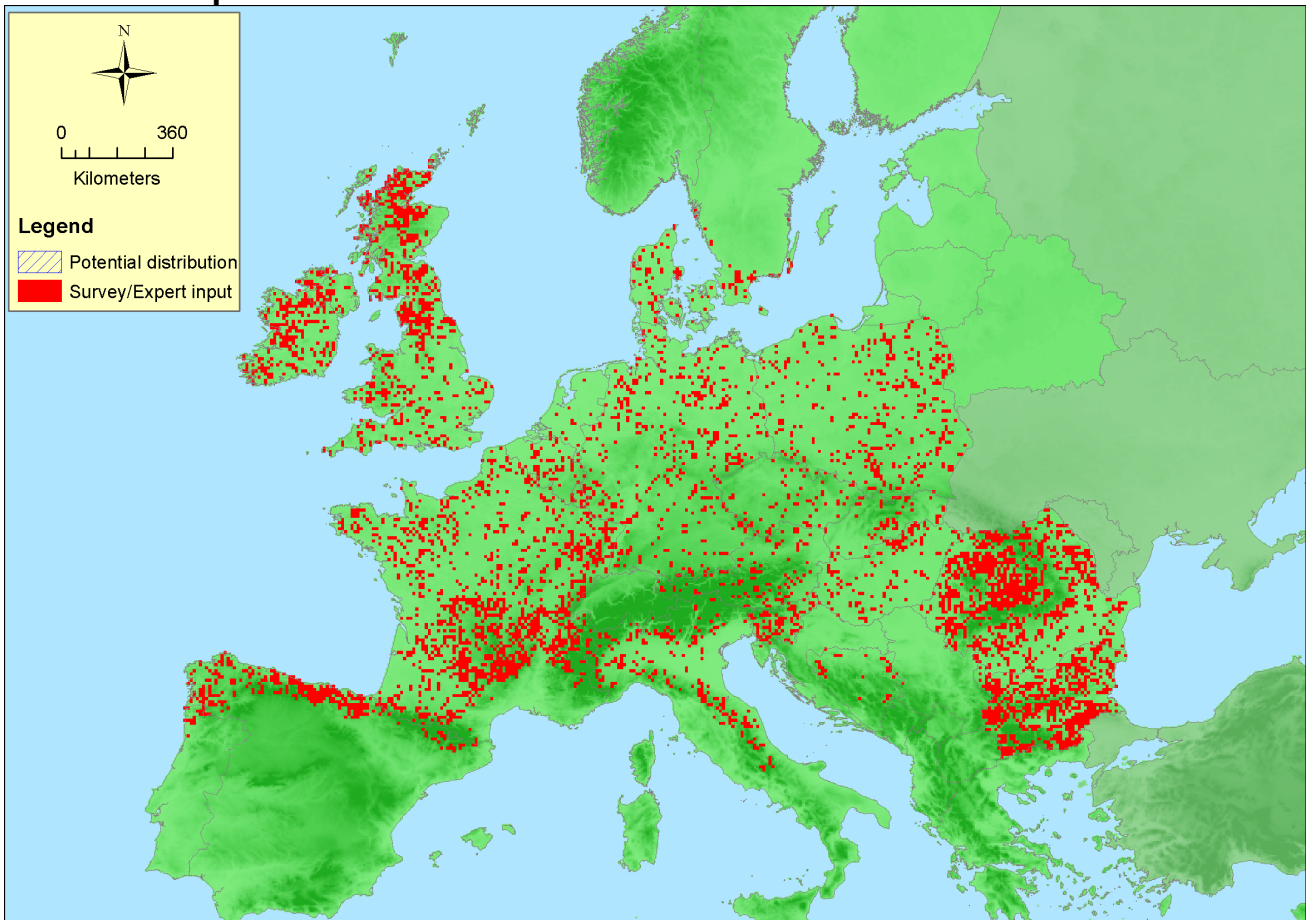
EU 28	Present or Presence Uncertain	Current area of habitat	Recent trend in quantity (last 50 yrs)	Recent trend in quality (last 50 yrs)
<i>Austria</i>	Present	unknown Km ²	Decreasing	Decreasing
<i>Belgium</i>	Uncertain	unknown Km ²	Unknown	Unknown
<i>Bulgaria</i>	Present	unknown Km ²	Decreasing	Decreasing
<i>Croatia</i>	Present	1 Km ²	Decreasing	Decreasing
<i>Estonia</i>	Present	58 Km ²	Stable	Decreasing
<i>Finland</i>	Finland mainland: Present	21 Km ²	Stable	Decreasing
<i>Germany</i>	Present	unknown Km ²	Decreasing	Decreasing
<i>Hungary</i>	Present	55 Km ²	Decreasing	Decreasing
<i>Ireland</i>	Present	10 Km ²	Decreasing	Decreasing
<i>Italy</i>	Italy mainland: Present	unknown Km ²	Decreasing	Decreasing
<i>Latvia</i>	Present	12 Km ²	Decreasing	Decreasing
<i>Lithuania</i>	Present	12-15 Km ²	Decreasing	Decreasing
<i>Netherlands</i>	Present	unknown Km ²	Unknown	Unknown
<i>Slovenia</i>	Present	5 Km ²	Decreasing	Decreasing
<i>Spain</i>	Spain mainland: Present	unknown Km ²	Decreasing	Decreasing
<i>UK</i>	United Kingdom: Present	2000 Km ²	Stable	Decreasing

EU 28 +	Present or Presence Uncertain	Current area of habitat	Recent trend in quantity (last 50 yrs)	Recent trend in quality (last 50 yrs)
<i>Bosnia and Herzegovina</i>	Present	100 Km ²	Decreasing	Decreasing
<i>Switzerland</i>	Present	400-600 Km ²	Decreasing	Decreasing

Extent of Occurrence, Area of Occupancy and habitat area

	Extent of Occurrence (EOO)	Area of Occupancy (AOO)	Current estimated Total Area	Comment
EU 28	4642500 Km ²	5330	>2656 Km ²	But of this, 2000km ² are from the UK where the habitat is taken to include aristocratic and royal parklands and ancient hunting forests. A third of the countries responding indicate an unknown area..
EU 28+	4642500 Km ²	5362	>2656 Km ²	

Distribution map



The map is rather good for the EU28, although it may overestimate the distribution in some countries, but it lacks most data for non EU countries. Data sources: AGFOR, NAT, LIT, EXP.

How much of the current distribution of the habitat type lies within the EU 28?

About 80%

Trends in quantity

There is clear evidence of losses in extent over recent historical time of often over 80% in a majority of the countries, with longer-term losses of the same order recorded from Germany, Austria and Hungary. Where future shifts have been assessed, some countries (Germany, Austria, Bulgaria, Bosnia-Herzegovina) predict a continuing loss, others (Hungary, Belgium, Estonia, Latvia) report initiatives that could increase the extent.

- Average current trend in quantity (extent)
EU 28: Decreasing

EU 28+: Decreasing

- Does the habitat type have a small natural range following regression?

No

Justification

The reduction in extent is very substantial but widespread so the overall range is probably largely unchanged.

- Does the habitat have a small natural range by reason of its intrinsically restricted area?

No

Justification

The habitat has a potentially very extensive range as a distinctive cultural replacement for high forest. Also the area in individual sites may be huge.

Trends in quality

Almost all countries report a recent history of moderate to severe decline in biotic and abiotic quality often over more than 50% of the extent, and a continuing trend in this direction. Where a response has been made about future trends, outside managed areas, this decline is expected to continue.

- Average current trend in quality

EU 28: Decreasing

EU 28+: Decreasing

Pressures and threats

This diverse habitat is suffering from changes to the management of either/both of the grassland and tree cover which are both essential elements in its structure and composition. The widespread decline of grazing or mowing and spread of scrub, the abandonment of pollarding, the felling of ancient trees or replacement by inappropriate broadleaves or conifers and the lack of integration of these different interventions is variously affecting the quantity and quality of the habitat in different parts of Europe. Atmospheric pollution has a particularly severe effect on the epiphytic flora that often characterizes ancient trees in this habitat. These pressures are expected to continue.

List of pressures and threats

Agriculture

Grazing

Abandonment of pastoral systems, lack of grazing

Sylviculture, forestry

Forest planting on open ground

Forest and Plantation management & use

Forest replanting

Forestry clearance

Removal of dead and dying trees

Grazing in forests/ woodland

Urbanisation, residential and commercial development

Urbanised areas, human habitation

Conservation and management

Conservation of this habitat demands maintenance of integrated management of both grassland and tree cover over an often large scale and, even in those landscapes which have some measure of protection for other reasons (like historic parklands or national parks), this can be difficult to achieve in the changed social and economic conditions prevailing now.

List of conservation and management needs

Measures related to agriculture and open habitats

Maintaining grasslands and other open habitats

Measures related to forests and wooded habitats

Restoring/Improving forest habitats

Adapt forest management

Conservation status

No equivalent Annex 1-types.

When severely damaged, does the habitat retain the capacity to recover its typical character and functionality?

Restoration is more successful where the habitat still retains some measure of structural integrity and floristic diversity but, even where restoration is better, the wider fabric of traditional land-use with its distinctive combination of grazing and silviculture has often disintegrated.

Effort required

50+ years
Through intervention

Red List Assessment

Criterion A: Reduction in quantity

Criterion A	A1	A2a	A2b	A3
EU 28	-44 %	unknown %	unknown %	20-95 %
EU 28+	-44 %	unknown %	unknown %	20-95 %

The percentage decline in the recent past is based on calculations from those countries (6 out of 13) which have provided at least a present extent and an expert estimate of recent historical trend, sometimes also a past extent figure, plus the UK where the bulk of the remaining extent is found and for which there is a longer term estimate of loss. This results in an assessment of 44% decline, leading to the category Vulnerable. Longer term reductions are estimated for only a few countries taking a datum from 1750 to 1900 and provide a wider range of losses from which it is impossible to calculate an overall average. This criterion has therefore been categorised as Data Deficient. Where future shifts have been assessed, some countries (Germany, Austria, Bulgaria, Bosnia-Herzegovina) predict a continuing loss, others (Hungary, Belgium) report initiatives that could increase the extent. The UK is an exceptional case where, though the quality of the habitat is currently declining, a large extent survives in the form of ancient royal hunting forests or aristocratic estates landscaped in a distinctive British tradition.

Criterion B: Restricted geographic distribution

Criterion B	B1				B2				B3
	EOO	a	b	c	AOO	a	b	c	
EU 28	>50000 Km ²	Yes	Yes	No	>50	Yes	Yes	No	No
EU 28+	>50000 Km ²	Yes	Yes	No	>50	Yes	Yes	No	No

No detailed information is available but continuing losses in extent (B1/2ai) and both biotic and abiotic quality (B1/2aai & iii) and continuing threats support concern. The AOO and EOO however are estimated to be much larger than the thresholds for criteria B1 and B2 respectively.

Criterion C and D: Reduction in abiotic and/or biotic quality

Criteria C/D	C/D1		C/D2		C/D3	
	Extent affected	Relative severity	Extent affected	Relative severity	Extent affected	Relative severity
EU 28	78 %	16 %	unknown %	unknown %	unknown %	unknown %
EU 28+	56 %	58 %	unknown %	unknown %	unknown %	unknown %

Criterion C	C1		C2		C3	
	Extent affected	Relative severity	Extent affected	Relative severity	Extent affected	Relative severity
EU 28	unknown %	unknown %	unknown %	unknown %	unknown %	unknown %
EU 28+	unknown %	unknown %	unknown %	unknown %	unknown %	unknown %

Criterion D	D1		D2		D3	
	Extent affected	Relative severity	Extent affected	Relative severity	Extent affected	Relative severity
EU 28	unknown %	unknown%	unknown %	unknown%	unknown %	unknown%
EU 28+	unknown %	unknown%	unknown %	unknown%	unknown %	unknown%

The calculation of trends in quality is based on data from those countries (6/13 including two EU28+ Switzerland and Bosnia-Herzegovina) providing extent and severity estimates and a current area. The considerably higher figure for severity in EU28+ is based on data from Switzerland. These data point to an assessment of NT approaching VU.

Criterion E: Quantitative analysis to evaluate risk of habitat collapse

Criterion E	Probability of collapse
EU 28	unknown
EU 28+	unknown

There is no quantitative analysis available that estimates the probability of collapse of this habitat type.

Overall assessment "Balance sheet" for EU 28 and EU 28+

	A1	A2a	A2b	A3	B1	B2	B3	C/D1	C/D2	C/D3	C1	C2	C3	D1	D2	D3	E
EU28	VU	DD	DD	DD	LC	LC	LC	NT	DD	DD	DD	DD	DD	DD	DD	DD	DD
EU28+	VU	DD	DD	DD	LC	LC	LC	VU	DD	DD	DD	DD	DD	DD	DD	DD	DD

Overall Category & Criteria	
EU 28	EU 28+

Overall Category & Criteria			
Red List Category	Red List Criteria	Red List Category	Red List Criteria
Vulnerable	A1	Vulnerable	A1

Confidence in the assessment

Medium (evenly split between quantitative data/literature and uncertain data sources and assured expert knowledge)

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References

Bergmeier, E., Petermann, J., & Schröder, E. (2010). Geobotanical survey of wood-pasture habitats in Europe: diversity, threats and conservation. *Biodiversity and Conservation* 19: 2995-3014.

Bergmeier, E., Roellig, M. (2014). Diversity, threats and conservation of European wood-pastures. In: Hartel, T. and Plieninger, T. (Eds.). *European wood-pastures in transition: A social-ecological approach*. Routledge, London and New York, 19-38.pp.

Garbarino, M., & Bergmeier, E. (2014). Plant and vegetation diversity in European wood-pastures. In: Hartel, T., Plieninger, T. (Eds.) *European wood-pastures in transition: A social-ecological approach*. Routledge, London and New York, 113-125.pp.

Hartel, T., Dorresteyn, I., Klein, C., Máthé, O., Moga, C. I., Öllerer, K. and Fischer, J. (2013). Wood-pastures in a traditional rural region of Eastern Europe: Characteristics, management and status. *Biological Conservation* 166: 267-275.

Hartel, T. and Plieninger, T., 2014. *European wood-pastures in transition: A social-ecological approach*. Routledge, London and New York. 322 pp.

Plieninger, T., Hartel, T., Martín-Lopez, B., Beaufoy, G., Bergmeier, E., Kirby, K., Montero, M-J., Moreno, G., Oteros-Rozas, E. & van Uytvanck, J. 2015. Wood-pastures of Europe: Geographic coverage, social-ecological values, conservation management and policy implications. *Biological Conservation* 190: 70-79.

Rois-Diaz, M., Mosquera-Losoda, M.R. & Rigueiro-Rodríguez, A. (2006). *Biodiversity Indicators on Silvopastoralism across Europe*. EFI Technical Report 21, European Forest Institute.

Rodríguez, A. R., McAdam, J., & Mosquera-Losada, M. R. (Eds.). (2008). *Agroforestry in Europe: current status and future prospects* (Vol. 6). Springer Science & Business Media. pp. 450.