Course schedule

REG 31306

Trends in Forest and Nature Conservation

Period 1, Academic Year 2019-2020

Contact person
Name: Milena Holmgren
E-mail: Milena.Holmgren@wur.nl

Trends in Forest and Nature Conservation (REG 31306)

Language	English
Credits	6
Period	1; 2019-2020, Weeks 01- 06
Time and venue	afternoon (see Brightspace)
Exam	25 October 2019; 13:30-16:30; room C-0004 (Bongerd)
Re-exam	to be announced through Brightspace
Contact person	Milena Holmgren; Milena.Holmgren@wur.nl; 485284
Core teaching team and Examiner(s)	Milena Holmgren Oliver Human Philippine Vergeer Pieter Zuidema
Invited Lecturers	Meindert Brouwer Rob Buiter David Kleijn Jasper Eikelboom Ignas Heitkonig Milena Holmgren Oliver Human Verina Ingram Rik Leemans Juul Limpens Erik Meesters Catherina de Pater Marielos Peña-Claros Andries Richter Ute Sass-Klaassen Joop Schaminee Marten Scheffer Mathijs Schouten Peter van der Sleen Esther Turnhout Ingrid Visseren Philippine Vergeer Wietse van der Werf Pieter Zuidema Joeri Zwerts
Secretariat	Patricia Meijer; Lumen B.109; 0317-485828

Profile of the course

TRENDS in Forest and Nature Conservation is developed by the four chair-groups (REG, PEN, FNP and FEM) teaching the Master Forest and Nature Conservation (MFN) programme and some external invited speakers.

The course reflects on five major trends in conservation science from ecological and social perspectives. The course uses a workshop format with a diverse selection of speakers to present current approaches in conservation and management within each of the five major trends in conservation science. The course combines classical lectures, group discussions of scientific papers and individual writing assignments. During the course students practice how to critically evaluate a scientific paper and how to write an essay that discusses the scientific evidence behind a chosen trend in conservation and management.

The course is directed to first year students from the Master in Forest and Nature Conservation (MFN) programme and complemented with students from other master programs.

Assumed prerequisite knowledge

None

Learning outcomes

- Analyse emerging trends in conservation science using ecological and social sciences (niv. 4).
- Evaluate the scientific evidence underlying a conservation approach (niv. 5).
- Assess scientific papers critically (niv. 5)
- Write a scientific essay that analyses an emergent trend in conservation (niv. 6).

Course materials and resources

All material is electronically available through the Brightspace Educational Platform:

- Electronic reader with course objectives and assignments
- Scientific papers (also available through the university electronic library)
- Lectures available as power point presentations and recordings
- Examples of exam questions
- External course website to facilitate communication with new external students

Educational (=teaching and learning) activities

The course uses a combination of working forms:

- Lectures
- Group discussions: paper discussions in small groups (Assignment 1)
- Individual essay writing (Assignment 2)

Instructions for the reading and writing assignments are available through Brightspace. Examples of exam questions are also available through Brightspace.

Assessment strategy

Students will be evaluated through 2 assignments and a final exam:

- Assignment 1: Reading critically (15 %)
- Assignment 2: Individual essay (45 %)
- Final exam (40 %)

Intended learning outcomes	Assignment 1	Assignment 2	Exam
1. Analyse emerging trends in conservation science using ecological and social sciences	X	X	X
2. Evaluate the scientific evidence underlying a conservation approach	X	X	X
3. Assess scientific papers critically	X		
4. Write a scientific essay that analyses an emergent trend in conservation		X	

Minimum grade of each component of the course (assignments and exam) should be ≥ 5.5 to complete the course successfully. The grades for each component of the course will remain valid for 1 academic year.

Course Contents

Conservation attitudes, targets and strategies have changed dramatically in the last four decades, shifting:

1) From understanding ecological systems as having easily predictable responses to environmental change to an increasing awareness of nonlinear dynamics and sometimes unpredictable outcomes;
2) From an understanding of nature embodied by landscapes with low human influence towards a pragmatic acceptance of disturbance and an utilitarian value of nature as provider of services;
3) From using single disciplinary approaches to a growing awareness that guidelines for conservation and management need to be evidence-based and that inter-disciplinarity is key to understand and provide evidence on how socio-ecological systems function;
4) From targeting particular populations or ecological communities to addressing conservation and management of complex interlinked socio-ecological ecosystems;
5) From remaining in academic circles towards an increasing engagement and communication with broad social audiences.

The historical shifts in the ways we envision nature conservation and management are described clearly in the paper by *Mace G. 2014. Whose conservation? Science 345: 1558-1560.*

In this course, we discuss five trends in nature conservation. Each of these trends is explored within one thematic block through a series of lectures and two assignments. In **Assignment 1,** students discuss one scientific paper per thematic block and report individually on one assigned paper. In **Assignment 2**, students further analyse the thematic trends through an individual essay using a case in-depth to reflect on one trend (or a combination of them).

Theme 1: Resilience of Socio-Ecological Systems

Trend: Increasing awareness of the potential persistence of alternative states in socio-ecological systems. Shift in framework from linear and predictable successional trajectories to nonlinear dynamics and sometimes unpredictable outcomes. There is a stronger emphasis on maintenance of functional properties (e.g. nutrient retention) and dynamics (e.g. disturbance regimes) than on species composition (especially in restoration projects). There is also increasing understanding of how social resilience is related to ecological resilience, as a characteristic of ecosystems to maintain themselves in the face of disturbance and the ability of groups or communities to cope with external stresses and disturbances as a result of social, political and environmental change.

Lectures:

- Marten Scheffer: discusses the concepts of resilience and how they apply to different types of complex systems.

- Verina Ingram: applies the concept of resilience to social systems and shows examples of how societies can be profoundly transformed when ecological systems are unable to cope with human and environmental change.
- Juul Limpens explores the shifts between treeless and shrub (or tree) dominated ecosystem states in boreal, subarctic and arctic regions and the mechanisms explaining their resilience.
- Milena Holmgren analyses the mechanisms that explain the resilience of tropical forests, savannas and treeless landscapes.

Paper 1: *Folke C. et al. 2016 Social-ecological resilience and biosphere-based sustainability science. Ecology & Society 21(3): 41.*

Theme 2: Protect-Manage-Fight (Spare vs. Share)

Trend: Increasing recognition that most nature is not pristine and value conservation also in managed ecosystems. We reflect on current debates whether conservation is best done by sparing land (i.e. through protected areas and agricultural intensification) or by sharing land (i.e. combining biodiversity conservation with multiple land uses). We reflect also on the uses of community-based and technology – based approaches to conservation.

Lectures:

- Pieter Zuidema: analyses the tension between sharing or sparing in conservation debates.
- Marielos Peña-Claros: explores the potential role of sustainable forest management for conservation of tropical forests, a sharing approach.
- Joeri Zwerts: compares wildlife conservation in intact versus managed tropical forests.
- Catharina de Pater presents main lessons of community based conservation and forestry.
- Jasper Eikelboom shows current technological developments for wildlife conservation.

Paper 2*: Watson J.E.M. et al. 2018. The exceptional value of intact forest ecosystems. Nature Ecology and Evolution 2: 599-610.*

Theme 3: Conservation Science vs. Practice

Trend: Recognition of the cultural plurality in visions of nature and knowledge on ecological systems including indigenous people and different ways of governing nature and their effectiveness. There is an increasing appreciation for different forms of governance including private initiatives in conservation (e.g. private protected areas) and management (e.g. community forests, public private partnerships, payment for environmental services schemes) and monitoring of ecological systems (e.g. citizen involvement) in combination with traditional governmental and nongovernmental approaches. This has stimulated interdisciplinary collaboration between natural and social sciences to target environmental issues. We reflect on lessons from conservation science and policy at national and international scales.

Lectures:

- Ignas Heitkonig: reflects on the main lessons on conservation science
- Ingrid Visseren: reflects on the lessons from conservation policy and the challenges of governance to put them into practice.
- Joop Schaminee: presents a historical overview of conservation in The Netherlands with an emphasis on conservation of landscapes and whole ecosystems.
- Esther Turnhout: presents the lessons from inter-governmental platforms on conservation (IPBES)
- David Kleijn: reflects on conservation science and practice in European agricultural lands
- Oliver Human: syntheses and links the previous lectures of this block with the propositions of Paper 3 for transforming conservation science and practice.

Paper 3: *Colloff M.J. et al. 2017. Transforming conservation science and practice for a postnormal world. Conservation Biology 31: 1008-1017*

Theme 4: Ecosystem Approach and Teleconnections

Trend: Recognition of the importance of interactions between ecological systems (at different spatial and temporal scales) for maintaining the structure, functioning and biodiversity of ecosystems. An ecosystem-based approach to conservation focus attention on restoring trophic cascades, keystone species and foundational species (e.g. reintroduction of top predators, herbivores, and animal or plant keystone species); it emphases the links across ecosystems (e.g. terrestrial-aquatic) and beyond political borders for conservation (e.g. protected areas), resource management (e.g. fisheries), nutrient subsidies and dispersion of individuals; it considers global and regional changes in climate and landscapes for conservation aims (e.g. species migration) and ecological restoration (e.g. reforestation and climate feedbacks).

Lectures:

- Verina Ingram: discusses the role of teleconnections in socio-ecological systems
- Peter van der Sleen: explores the interconnections between terrestrial and aquatic ecosystems.
- Erik Meesters: explains the importance of an ecosystem approach for conservation and management using coastal systems to illustrate main ideas.
- Andries Richter: uses integrated ecological-economical approaches for marine conservation
- Rik Leemans: presents an overview of the state of the planet, the causes of disruption of planetary functions and discusses a set of scenarios.
- Philippine Vergeer: analyses the effects of landscape changes on genetic and epigenetic diversity and explores the potential role of genetic information on management and restoration projects.

Paper 4*: Harvey E. et al. 2017. Bridging ecology and conservation: from ecological networks to ecosystem function. Journal of Applied Ecology 54: 371-379.*

Theme 5: Communicating for Conservation Success

Trend: Environmental scientists and practitioners are increasingly aware of the need to communicate conservation goals and results more effectively with broad and diverse audiences. Scientists are increasingly obliged to have societal impact, and to communicate their science to diverse audiences, such as policymakers, practitioners and industry. New trends have emerged as different forms of science communication – such as art, film and blogs - are being used to reaching out to the public and different audiences who are either influenced or affected by conservation activities.

Lectures:

- Wietse van der Werf: reflects on how to build citizen science and presents the work of the Sea Ranger Service as an example to monitor overexploitation of marine resources.
- Rob Buiter: explains why and how to successfully practice science journalism.
- Ute Sass-Klaassen: shares her experience with twittering trees to engage society on climate change effects on trees
- Matthijs Schouten: advances the idea that how people value nature and treat it strongly depends on life experiences and culture. He frames visions of nature in 4 main types (i.e. ruler, steward, partner and participant) that differ radically in the way people see themselves and nature and the implications of this for conservation and management.
- Meindert Brouwer: shares his expertise on how to communicate conservation goals effectively across diverse audiences.

Paper 5: *Rose N.A. & Parsons E.C.M. 2015. "Back off, man, I'm a scientist!" When marine conservation science meets policy. Ocean & Coastal Management 115: 71-76.*

Course schedule

week	day		time	theme	title	speaker	chairgroup	type	room
1	Mo	2	15.50-16.30	**1. Resilience of Socio-Ecological Systems**	Course introduction	Milena Holmgren	REG	plenary	Leeuwenborch C0063
			16.40-17.20		Team formation: maximizing diversity	Holmgren/Human/Vergeer/Zu	REG/FNP/PEN/FEM	plenary	Leeuwenborch C0063
	Tu	3	15.50-16.30		Methods 1: How to critically read a paper?	Pieter Zuidema	FEM	plenary	Forum 763
			16.40-17.20		Methods 2: How to write effectively: Instructions for the essay. Avoid plagiarism	Milena Holmgren	REG	plenary	Forum 763
	We	4	15.50-16.30		Resilience of complex systems	Marten Scheffer	invited (AEW)	plenary	Forum 763
			16.40-17.20		Social Resilience for Dealing with Environmental Change	Verina Ingram	FNP	plenary	Forum 763
	Th	5	14.00-14.40		Paper Discussion Introduction Trends (Mace 2014)	Holmgren/Human/Vergeer/Zu	FNP-REG-PEN-FEM	small rooms	Orion G-rooms (12 rooms)
			14.50-15.30		Paper Discussion Theme 1 (Folke et al. 2016)	Holmgren/Human/Vergeer/Zu	FNP-REG-PEN-FEM	small rooms	Orion G-rooms (12 rooms)
	Fr	6	15.50-16.30		Resilience of arctic and boreal ecosystems	Juul Limpens	PEN	plenary	Forum 763
			16.40-17.20		Resilience of tropical ecosystems	M. Holmgren	REG	plenary	Forum 763
2	Mo	9	15.50-16.30	2: Protect, Manage or Fight	Sharing or sparing: introduction to a conservation debate	Pieter Zuidema	FEM	plenary	Leeuwenborch C0063
			16.40-17.20					plenary	Leeuwenborch C0063
	Tu	10	15.50-16.30		Conserving tropical forests: potential role of sustainable forest management	Marielos Pena-Claros	FEM	plenary	Forum 763
			16.40-17.20		Wildlife conservation in intact versus managed tropical forests	Joeri Zwerts	FEM	plenary	Forum 763
	We	11	15.50-16.30		Soft Conservation: Community-based programs	Catharina de Pater	FNP	plenary	Forum 763
			16.40-17.20		Hard Conservation: Technological Race	Jasper Eikelboom	REG	plenary	Forum 763
	Th	12	14.00-14.40		Paper Discussion Theme 2 (Watson et al. 2018)	Holmgren/Human/Vergeer/Zu	FNP-REG-PEN-FEM	small rooms	Orion G-rooms (12 rooms)
			14.50-15.30		IPBES Discussion (Section A: pages 2-3; 9-15)).	Holmgren/Human/Vergeer/Zu	FNP-REG-PEN-FEM	small rooms	Orion G-rooms (12 rooms)
	Fr	13	14.00-14.40		Essay Writing: Define topic and sketch outline	Holmgren/Human/Vergeer/Zu	FNP-REG-PEN-FEM	Computer	Forum PC-0512 combi/Orion PC-4044 combi
			14.50-15.30		Essay Writing: Define topic and sketch outline	Holmgren/Human/Vergeer/Zu	FNP-REG-PEN-FEM	Computer	Forum PC-0512 combi/Orion PC-4044 combi
3	Mo	16	15.50-16.30	3. Conservation Science and Practice	Lessons from conservation science	Ignas Heitkonig	REG	plenary	Leeuwenborch C0063
			16.40-17.20		Lessons from conservation policy	Ingrid Visseren	invited (Randbout)	plenary	Leeuwenborch C0063
	Tu	17	15.50-16.30		Lessons from Dutch conservation and management	Joop Schaminee	PEN	plenary	Forum 763
			16.40-17.20		Lessons from International Platforms: IPBES	Esther Turnhout	FNP	plenary	Forum 763
	We	18	15.50-16.30		Conservation science and practice in agricultural lands	David Kleijn	PEN	plenary	Forum 763
			16.40-17.20		Conservation Science and Practice: bringing the lessons together	Oliver Human	FNP	plenary	Forum 763
	Th	19	14.00-14.40		Paper Discussion Theme 3 (Colloff et al. 2017)	Holmgren/Human/Vergeer/Zu	FNP-REG-PEN-FEM	small rooms	Orion G-rooms (12 rooms)
			14.50-15.30		IPBES Discussion (Section B: pages 3-5; 16-21).	Holmgren/Human/Vergeer/Zu	FNP-REG-PEN-FEM	small rooms	Orion G-rooms (12 rooms)
	Fr	20	14.00-14.40		Essay Writing: Develop outline	Holmgren/Human/Vergeer/Zu	FNP-REG-PEN-FEM	Computer	Forum PC-0512 combi/Orion PC-4044 combi
			14.50-15.30		Essay Writing: Develop outline	Holmgren/Human/Vergeer/Zu	FNP-REG-PEN-FEM	Computer	Forum PC-0512 combi/Orion PC-4044 combi
4	Mo	23	15.50-16.30	**4- Ecosystem Approach & Teleconnections**	Teleconnections in Socio-Ecological Systems	Verina Ingram	FNP	plenary	Leeuwenborch C0063
			16.40-17.20		Looking across terrestrial-aquatic boundaries	Peter van der Sleen	REG	plenary	Leeuwenborch C0063
	Tu	24	15.50-16.30		Ecosystem-based conservation of marine systems	Erik Meesters	invited (IMARES)	plenary	Forum 763
			16.40-17.20		Integrated ecological-economical approaches for marine conservation	Andries Richter	invited	plenary	Forum 763
	We	25	15.50-16.30		Climate changes and nature conservation	Rik Leemans	invited (ESA)	plenary	Forum 763
			16.40-17.20		Small conservation is also big conservation	Philippine Vergeer	PEN	plenary	Forum 763
	Th	26	14.00-14.40		Paper Discussion Theme 4 (Harvey et al. 2017)	Holmgren/Human/Vergeer/Zu	FNP-REG-PEN-FEM	small rooms	Orion G-rooms (12 rooms)
			14.50-15.30		IPBES Discussion (Section C: pages 5-7; 21-27).	Holmgren/Human/Vergeer/Zu	FNP-REG-PEN-FEM	small rooms	Orion G-rooms (12 rooms)
	Fr	27	14.00-14.40		Essay Writing >> Peer review within thematic cluster	Holmgren/Human/Vergeer/Zu	FNP-REG-PEN-FEM	Computer	Forum PC-0512 combi/Orion PC-4044 combi
			14.50-15.30		Essay Writing >> Peer review within thematic cluster	Holmgren/Human/Vergeer/Zu	FNP-REG-PEN-FEM	Computer	Forum PC-0512 combi/Orion PC-4044 combi
5	Mo	30	15.50-16.30	**5 Communicating for Conservation Succes**	How to build social partners for conservation? The Sea Rangers Case	Wietse van der Werf	invited	plenary	Leeuwenborch C0063
			16.40-17.20		How to communicate science effectively	Rob Buiter	invited	plenary	Leeuwenborch C0063
	Tu	1	15.50-16.30		Twittering trees talk to society	Ute Sass-Klaassen	FEM	plenary	Forum 763
			16.40-17.20		Visions of nature and conservation messages	Mathijs Schouten	PEN	plenary	Forum 763
	We	2	15.50-16.30		How to communicate effectively for nature conservation	Meindert Brouwer	invited	plenary	Forum 763
			16.40-17.20		Wrap up Course: Questions?	Holmgren/Human/Vergeer/Zu	REG	plenary	Forum 763
	Th	3	14.00-14.40		Paper Discussion Theme 5 (Rose & Parsons 2015)	Holmgren/Human/Vergeer/Zu	FNP-REG-PEN-FEM	small rooms	Orion G-rooms (12 rooms)
			14.50-15.30		IPBES Discussion (Section D: pages 7-9; 27-31)	Holmgren/Human/Vergeer/Zu	FNP-REG-PEN-FEM	small rooms	Orion G-rooms (12 rooms)
	Fr	4	14.00-14.40		Essay Writing >> Revise based on peer reviews	Holmgren/Human/Vergeer/Zu	FNP-REG-PEN-FEM	Computer	Forum PC-0512 combi/Orion PC-4044 combi
			14.50-15.30		Essay Writing >> Revise based on peer reviews	Holmgren/Human/Vergeer/Zu	FNP-REG-PEN-FEM	Computer	Forum PC-0512 combi/Orion PC-4044 combi
6	Mo	7	14.00-14.40	**Assignments**	Essay Writing >> Feedback from supervisors	Holmgren/Human/Vergeer/Zu	FNP-REG-PEN-FEM	Computer	Forum PC-512 comb/Forum PC-602 combi
			14.50-15.30		Essay Writing >> Feedback from supervisors	Holmgren/Human/Vergeer/Zu	FNP-REG-PEN-FEM	Computer	Forum PC-512 comb/Forum PC-602 combi
	Tu	8	15.50-16.30		Essay Writing	self study		Computer	Orion PC-4050 combi
			16.40-17.20		Essay Writing	self study		Computer	Orion PC-4050 combi
	Wed	9			Essay Writing	self study			
					Essay Writing	self study			
	Th	10	14.00-14.40		Essay Writing	self study		Computer	Orion PC-4044 combi
			14.50-15.30		Essay Writing	self study		Computer	Orion PC-4044 combi
	Fr	11	14.00-14.40		Essay Writing >> Feedback from supervisors	Holmgren/Human/Vergeer/Zuidema		Computer	Forum PC-0512 combi/Orion PC-4044 combi
			14.50-15.30		Essay Writing >> Feedback from supervisors	Holmgren/Human/Vergeer/Zuidema		Computer	Forum PC-0512 combi/Orion PC-4044 combi
7	Mo	14			Essay Writing	self study			
					Essay Writing	self study			
	Tu	15			Essay Writing	self study			
					WC: Essay Examination->>SEND to TURNITIN	self study			
	Wed	16			WC Final Exam Preparation	self study			
					WC Final Exam Preparation	self study			
	Th	17			WC Final Exam Preparation	self study			
					WC Final Exam Preparation	self study			
	Fr	18			WC Final Exam Preparation	self study			
8	**Fr**	**25**	**13:30-16;30**		**FINAL EXAM**	**Milena Holmgren**	**REG**		**Sporthal Bongerd C0004**