A Meta-Analysis on the Impacts of Partial Cutting on Forest Structure and Carbon Storage

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Supporting materials

Table S1 Studies included in this meta-analysis

Reference	LOC	CLM	Species	RY	OBS	DT
Abohassan et al., 2010	SA	STR	Broad	2	2	4
Alongi and de Carvalho, 2008	TL	TR	Conif	1	3	4
Anderson et al., 2002	US	TC	Conif	1,5,6,10,15,32	27	2
Aref et al., 2004	PK	TC	Broad	1,2	2	4
Bailey and Tappeiner, 1998	US	TM	Conif	18	2	2, 3
Bebber et al., 2004	CA	BO	Conif	1-8	8	1
Bréda et al., 1995	FR	ME	Broad	1 ,2	2	1
Burgess et al., 2005	CA	TC	Conif	10, 20, 30	18	1, 3
Campbell et al., 2009	US	TC	Conif	3, 16	4	2, 4

Cañellas et al., 2004	ES	TM	Broad	1, 4, 8	21	1, 2, 4
Casselman et al., 2007	US	TC	Conif	2-9	10	1,2,3
Chan et al., 2006	US	TC	Conif	1,4,8	18	1,2
Chiang et al., 2008	US	TC	Broad	1	3	4
Cimon-Morin et al., 2010	CA	BO	Conif	3	4	2
Cochran and Barrett, 1995	US	TC	Conif	5,10	30	1,2,3
Covington, 1981	US	TC	Broad	30	1	6
Davis et al, 2007	US	TC	Conif	5	2	1
DeLuca and Zouhar, 2000	US	TC	Conif	1	3	7
Dore et al., 2008	US	STR	Conif	1	3	4, 6, 7
Elliott et al., 2002	US	TM	Broad	2, 7, 16, 20	12	4
Fiddler et al, 1989	US	ME	Conif	10	3	3
Forshed et al., 2008	MY	TR	Broad	2,4,6,8	4	2
Gundale et al., 2005	US	TC	Conif	1	4	6, 7
Gyawali, 2008	US	TC	Conif	16	15	1, 2, 4
Harrington and Devine, 2011	US	TM	Conif	2,5,10,16,20,25	7	2,3
Hendrickson, 1988	CA	BO	Conif	4	2	4
Hocker Jr., 1982	US	BO	Broad	1, 2, 3, 4	4	4
Horner et al., 2010	AU	TC	Broad	1,2,7,11,13,17,22,26, 31, 42	51	1, 4
Ishii et al., 2008	JP	TM	Conif	4	2	2
Jones Jr., 1977	US	STR	Conif	5,10,13,14,20	10	1
Kantavichai et al., 2010	US	TM	Conif	20	1	1
Kaye and Hart, 1998	US	TC	Conif	2	2	6, 7
Kaye et al., 2005	US	TC	Conif	2	6	5, 6, 7
Keyser, 2010	US	STR	Broad	1	1	4
Kunhamu et al., 2009	IN	TR	Broad	2	6	4, 7
Lamson and Smith, 1988	US	TC	Broad	5	9	1,2,3
Lee et al., 2002	CA	BO	Conif	5	1	4
Lei et al., 2007	CN	TC	Conif	1,3,5,7, 10,12	36	2, 3
Lindquist, 2007	US	ME	Broad	1,5,10,15,21,29	51	1,2,3
López et al., 2009	ES	ME	Broad	3	8	1, 4
Maassen et al., 2006	DE	TC	Conif	1	2	6, 7
Makineci, 2005	TR	ME	Broad	8	2	6
Makinen and Isomaki, 2004	FI	TM	Conif	27	9	1
Man et al., 2008	CA	BO	Conif	1,3,5,11	8	2
Mayor and Rodà, 1993	ES	ME	Broad	6, 9, 12	8	1,2,4
Meadows and Goelz, 1999a	US	STR	Broad	2-7	14	1,2
Meadows and Goelz, 1999b	US	STR	Broad	3	4	1,2
Messier and Mitchell, 1994	CA	TM	Conif	6	3	2, 5
Mitchell et al., 1996	CA	TM	Conif	1, 9, 18	3	4
Moghaddas and Stephens,	US	TC	Conif	2	2	6, 7
Muñoz et al., 2008	CL	TM	Broad	9	2	4

Navarro et al., 2010	ES	ME	Conif	1,2,3,4	54	1, 2, 4, 5
Oliver, 1979	US	ME	Conif	5,10,15	12	2
Parrotta et al., 2002	BR	TR	Broad	11	3	2
Peitz et al., 2001	US	STR	Mixed	2,4	18	2
Peña-Claros et al., 2008	BO	TR	Conif	1,2,4	9	1
Pérez-de-Lis et al., 2011	ES	ME	Conif	18	12	1
Phipps, 1973	US	TC	Conif	8,9	7	2
Picchio et al., 2011	IT	ME	Conif	10	3	1,2,3
Powers et al., 2010	US	TC	Conif	7, 14,21,28,34	5	2
Powers et al., 2011	US	TC	Conif, Broad	3, 8	24	6, 7
Pukkala et al., 2002	FI	TM	Conif	10	16	1,2
Roberge, 1975	CA	BO	Broad	5,10	4	2
Roig et al., 2005	ES	ME	Conif	4, 8	18	1, 2, 3
Rytter, 1995	SE	BO	Broad	2,3,4	3	4
Sabatia et al., 2009	US	TC	Conif	16	6	1, 2, 4
Sawadogo et al., 2005	BF	TR	Broad	8	1	5
Scowcroft et al., 2007	US	STR	Broad	2	1	1
Simard et al., 2004	CA	TC	Broad	5	9	1, 2, 3
Slodičák and Novák, 2008	CZ	TC	Conif	6	1	4
Smith, 2003	US	BO	Conif	4, 5, 8	9	3
Startsev et al., 2007	CA	BO	Conif	1,2,3,4	4	1
Sullivan et al., 2001	CA	TM	Conif	10	9	1
Sword Sayer et al., 2004	US	STR	Conif	7, 10	2	4
Tan et al., 2008	CA	BO	Conif	23	4	1, 2
Tangki and Chappell, 2008	MY	TR	Broad	4,5,8,9,14,15,16	24	2, 3, 4
Tian et al., 2010	CN	STR	Conif	2	2	7
Vargas et al., 2009	MX	TR	Broad	3,4,5	9	2, 4
Velazquez-Martinez et al., 1992	US	TC	Conif	2,4,6	6	4
Yang et al., 2011	KR	TM	Conif	1	8	6, 7
Zhang et al., 2005	US	TM	Conif	10, 15, 20, 25	10	2

LOC, location; CLM, climate; RY, recovery years since cutting activities, which indicates the number of years after cutting when the data was collected; OBS is the number of observations extracted per reference; DT, data type.

Country abbrev: SA, Saudi Arabia; TL, Timor Leste; US, United States; PK, Pakistan; ES, Spain; FR, France; CA, Canada; MY, Malaysia; AU, Australia; JP, Japan; IN, India; CN, China; DE, Germany; FI, Finland; CL, Chile; BR, Brazil; BO, Bolivia; SE, Sweden; CZ, Czech Republic; MX, Mexico; KR, Korea; BF, Burkina Faso; MY, Malaysia; GA, Gabon; IT, Italy; TR, Turkey.

Climate abbrev: BO, boreal; STR, subtropical; TC, temperate continental; TM, temperate

maritime; TR, tropical; ME, Mediterranean.

Tree species abbrev: Conif, coniferous; Broad, broadleaf.

Data type: 1, DBH growth; 2, stand basal area; 3, volume; 4, aboveground biomass carbon (C); 5, understory C; 6, forest floor C; 7, mineral soil C (with a depth of 0-15 cm or 0-10 cm)

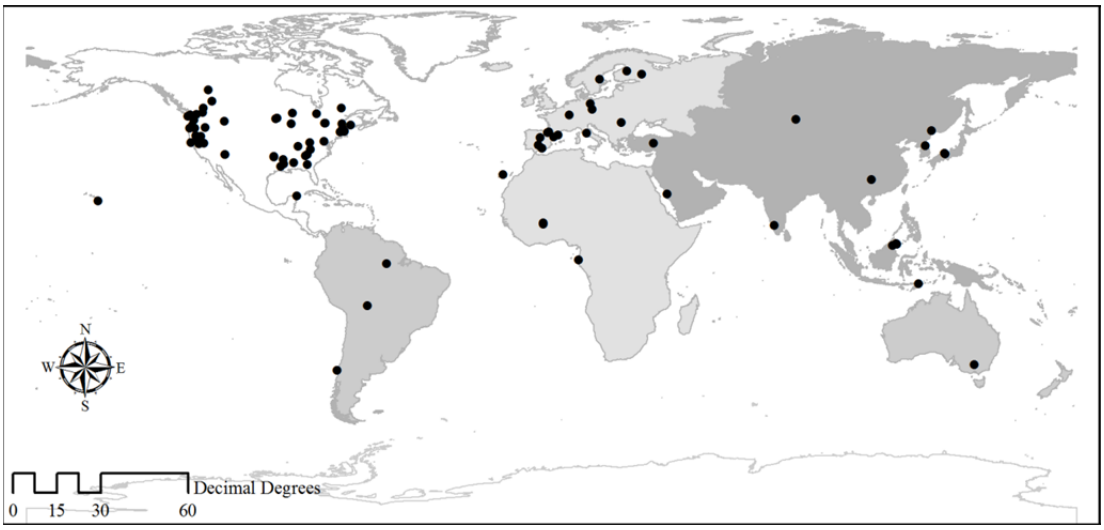

Figure S1 Locations of various individual studies included in this synthesis. Some individual studies contain several locations and some studies may each include several observations with different cutting intensities and recovery years after cutting activities.

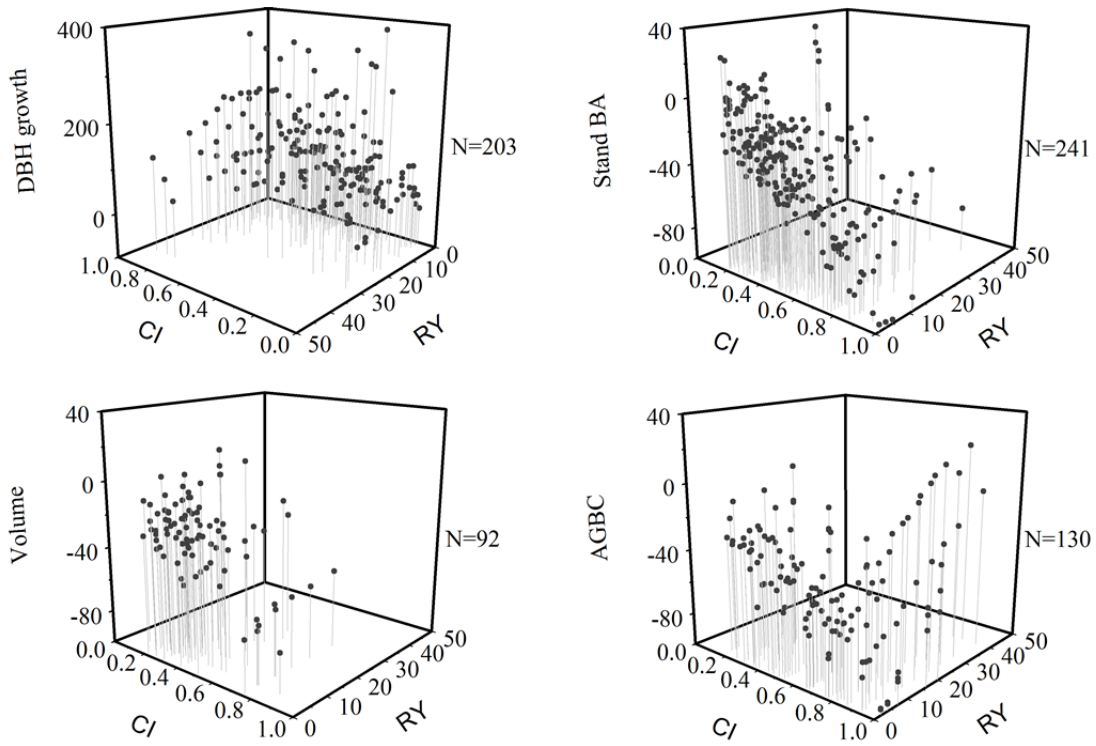

Figure S2 3-D maps show the influence of both cutting intensity (CI) and recovery years (RY) after cutting on the relative changes (%) of the four variables with sufficient observations, including growth of diameter at breast height (DBH growth), stand basal area (stand BA), volume and aboveground biomass carbon (AGBC). Five observations with relative change larger than 400% were not shown in the figure panel of DBH growth.

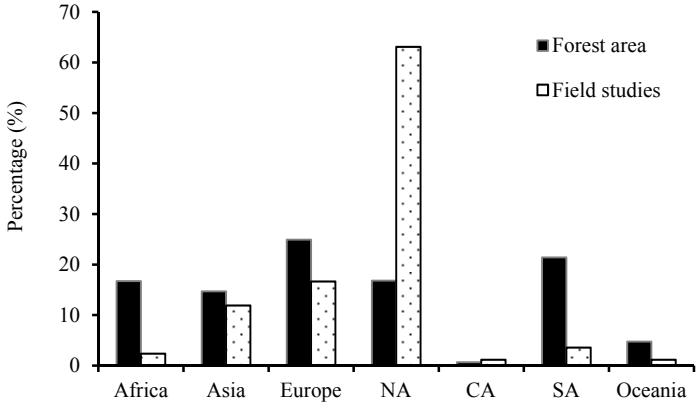

Figure S3 Frequency distributions of the forestland area (derived from FAO report (FAO, 2010)) and field studies by regions. NA, North America; CA, Central America and Caribbean; SA, South America.

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