

**Leslie Ries, Robert J. Fletcher, James Battin, and Thomas D. Sisk *Ecological Responses to Habitat Edges: Mechanisms, Models, and Variability Explained***

Appendix 1a. Citations for Table 1 showing the number of positive, negative, neutral (NR) and mixed responses to forest edges. A mixed result indicates more than one result for the same variable when the analysis was stratified by some factor. Responses are separated by taxon and whether the response variable was abundance (tallied by species) or for species richness or diversity. Two entries for one reference indicate results reported for more than one type of response or taxon.

Citation	Taxon	Gen Response	Pos	Neg	NR	Mixed
Altendorf et al. 2001	MAMMALS	ABUNDANCE BY SPECIES			1	
Arévalo 2002	PLANTS	ABUNDANCE BY SPECIES	1	1		
Baker et al. 2002	BIRDS	ABUNDANCE BY SPECIES	12	1	18	
Bayne & Hobson 1998	MAMMALS	ABUNDANCE BY SPECIES			3	1
Beier et al. 2002	BIRDS	ABUNDANCE BY SPECIES	11		49	
Bergman 1999	INVERTS	ABUNDANCE BY SPECIES	1			
Berry 2001	BIRDS	ABUNDANCE BY SPECIES	4			9
Berry 2001	BIRDS	RICHNESS/DIVERSITY	1			
Biek et al. 2002	HERPS	ABUNDANCE BY SPECIES			2	1
Brand & George 2001	BIRDS	ABUNDANCE BY SPECIES	2	4	8	
Brothers & Spingarn 1992	PLANTS	RICHNESS/DIVERSITY	1			
Brothers 1993	PLANTS	ABUNDANCE BY SPECIES	3		5	2
Brothers 1993	PLANTS	RICHNESS/DIVERSITY				1
Burger et al. 2000	BIRDS	ABUNDANCE BY SPECIES		1		
Burke & Nol 1998a	ABIOTIC	ABIOTIC	2	1	2	
Burke & Nol 1998b	BIRDS	ABUNDANCE BY SPECIES		1		
Burke & Nol 1998b	PLANTS	ABUNDANCE BY SPECIES	30	8	86	
Burke & Nol 1998b	PLANTS	RICHNESS/DIVERSITY	1			
Cadenasso et al. 1997	ABIOTIC	ABIOTIC			5	2
Camargo & Kapos 1995	ABIOTIC	ABIOTIC	1		1	
Campi & Mac Nally 2001	BIRDS	RICHNESS/DIVERSITY				1
Carvalho & Vasconcelos 1999	ABIOTIC	ABIOTIC	1			
Carvalho & Vasconcelos 1999	INVERTS	RICHNESS/DIVERSITY				1
Chalfoun et al. 2002	BIRDS	ABUNDANCE BY SPECIES	2		1	
Chalfoun et al. 2002	MAMMALS	ABUNDANCE BY SPECIES			2	1
Chang et al. 1995	MAMMALS	ABUNDANCE BY SPECIES	1			

Chen et al. 1995	ABIOTIC	ABIOTIC	5		1
Chen et al. 1992	PLANTS	ABUNDANCE BY SPECIES	2	1	
Cummings & Vessey 1994	MAMMALS	ABUNDANCE BY SPECIES	1		
Dale et al. 2000	BIRDS	ABUNDANCE BY SPECIES	6		28
Dale et al. 2000	BIRDS	RICHNESS/DIVERSITY			1
DeGraaf & Yamasaki 2002	HERPS	ABUNDANCE BY SPECIES		1	
de Maynadier & Hunter 1998	HERPS	ABUNDANCE BY SPECIES		2	1
Derge & Yahner 2000	MAMMALS	ABUNDANCE BY SPECIES		1	1
Desrochers & Fortin 2000	BIRDS	ABUNDANCE BY SPECIES	1		
Didham et al. 1998	INVERTS	ABUNDANCE BY SPECIES	4	2	16
Didham et al. 1998	INVERTS	RICHNESS/DIVERSITY			1
Dignan & Bren 2003	ABIOTIC	ABIOTIC			1
Dijak & Thompson 2000	MAMMALS	ABUNDANCE BY SPECIES		1	1
Donovan et al. 1997	BIRDS	ABUNDANCE BY SPECIES			1
Downie et al. 1996	INVERTS	RICHNESS/DIVERSITY	1		
Euskirchen et al. 2001	PLANTS	ABUNDANCE BY SPECIES	1	2	45
Euskirchen et al. 2001	PLANTS	RICHNESS/DIVERSITY			1
Evans & Gates 1997	BIRDS	ABUNDANCE BY SPECIES	1		
Evans & Gates 1997	BIRDS	RICHNESS/DIVERSITY			1
Flaspohler et al. 2001a	BIRDS	ABUNDANCE BY SPECIES			1
Flaspohler et al. 2001b	BIRDS	ABUNDANCE BY SPECIES	4	3	1
Fox et al. 1997	PLANTS	RICHNESS/DIVERSITY	1		
Fraver 1994	PLANTS	ABUNDANCE BY SPECIES	11		5
Fraver 1994	PLANTS	RICHNESS/DIVERSITY	1		
French & Elliott 1999	INVERTS	ABUNDANCE BY SPECIES		2	11
Garcia et al. 1998	MAMMALS	ABUNDANCE BY SPECIES			1
Gascon 1993	HERPS	ABUNDANCE BY SPECIES			2
Germaine et al. 1997	BIRDS	ABUNDANCE BY SPECIES	3	4	17
Grindal & Brigham 1999	INVERTS	RICHNESS/DIVERSITY			1
Harper & MacDonald 2001	PLANTS	ABUNDANCE BY SPECIES	18	8	
Harris & Reed 2002	BIRDS	ABUNDANCE BY SPECIES			1
Hayward et al. 1999	MAMMALS	ABUNDANCE BY SPECIES	1		
Heliölä et al. 2001	INVERTS	RICHNESS/DIVERSITY			1
Heske 1995	MAMMALS	ABUNDANCE BY SPECIES			6
Honnay et al. 2002	ABIOTIC	ABIOTIC	4	3	2
Honnay et al. 2002	PLANTS	ABUNDANCE BY SPECIES	6	1	3

Honnay et al. 2002	PLANTS	RICHNESS/DIVERSITY	1			
Huhta et al. 1999	BIRDS	ABUNDANCE BY SPECIES			1	
Jules 1998	ABIOTIC	ABIOTIC		1		
Jules 1998	PLANTS	ABUNDANCE BY SPECIES			1	
Kapos et al. 1993	ABIOTIC	ABIOTIC	1			
King et al. 1997	BIRDS	ABUNDANCE BY SPECIES	1	2	4	
King et al. 1998	BIRDS	ABUNDANCE BY SPECIES			1	
King et al. 1998	MAMMALS	ABUNDANCE BY SPECIES	2			
Kremsater & Bunnell 1992	MAMMALS	ABUNDANCE BY SPECIES			1	
Krüger & Lawes 1997	ABIOTIC	ABIOTIC	1		3	
Krüger & Lawes 1997	BIRDS	RICHNESS/DIVERSITY			1	
Krüger & Lawes 1997	PLANTS	RICHNESS/DIVERSITY			1	
Landenberger & Ostergren 2002	ABIOTIC	ABIOTIC	1			
Landenberger & Ostergren 2002	PLANTS	ABUNDANCE BY SPECIES	1			
Landenberger & Ostergren 2002	PLANTS	RICHNESS/DIVERSITY			1	
Lopez de Casenave et al. 1995	PLANTS	ABUNDANCE BY SPECIES	7	4	9	
Lopez de Casenave et al. 1995	PLANTS	RICHNESS/DIVERSITY	1			
Lopez de Casenave et al. 1998	BIRDS	ABUNDANCE BY SPECIES	5		58	8
Lopez de Casenave et al. 1998	BIRDS	RICHNESS/DIVERSITY			1	
Lopez de Casenave et al. 1998	PLANTS	RICHNESS/DIVERSITY	1			
Majer et al. 1997	INVERTS	RICHNESS/DIVERSITY			1	
Major et al. 2003	INVERTS	ABUNDANCE BY SPECIES			27	
Major et al. 2003	INVERTS	RICHNESS/DIVERSITY				1
Mancke & Gavin 2000	BIRDS	ABUNDANCE BY SPECIES	18	2	16	
Manson & Stiles 1998	MAMMALS	ABUNDANCE BY SPECIES				1
Martin & Major 2001	INVERTS	ABUNDANCE BY SPECIES	0	0	7	
Matlack 1993	ABIOTIC	ABIOTIC		2		4
Medley 1997	PLANTS	ABUNDANCE BY SPECIES	1			
Meekins & McCarthy 2001	ABIOTIC	ABIOTIC		2	4	1
Meekins & McCarthy 2001	PLANTS	ABUNDANCE BY SPECIES				1
Meiners & LoGiudice 2003	MAMMALS	ABUNDANCE BY SPECIES	1			
Menzel et al. 2002	MAMMALS	ABUNDANCE BY SPECIES			1	
Miller et al. 1998	BIRDS	ABUNDANCE BY SPECIES	1	5	5	
Mills 1995	MAMMALS	ABUNDANCE BY SPECIES	1			
Moen & Jonsson 2003	PLANTS	RICHNESS/DIVERSITY			1	
Mönkkönen & Mutanen 2003	INVERTS	ABUNDANCE BY SPECIES			8	

Mönkkönen & Mutanen 2003	INVERTS	RICHNESS/DIVERSITY		1	
Morneau et al. 1999	BIRDS	ABUNDANCE BY SPECIES		39	
Morneau et al. 1999	BIRDS	RICHNESS/DIVERSITY		1	
Moruzzi et al. 2002	MAMMALS	ABUNDANCE BY SPECIES	2	1	
Pearman 1997	HERPS	RICHNESS/DIVERSITY		1	
Peltonen 1999	INVERTS	ABUNDANCE BY SPECIES		1	1
Peltonen and Heliovaara 1998	INVERTS	ABUNDANCE BY SPECIES		2	
Renhorn et al. 1997	ABIOTIC	ABIOTIC	1		2
Restrepo & Vargas 1999	PLANTS	ABUNDANCE BY SPECIES	0	0	2
Restrepo et al. 1999	PLANTS	ABUNDANCE BY SPECIES	4	3	11
Rheault et al. 2003	PLANTS	ABUNDANCE BY SPECIES	0	2	1
Rodewald & Brittingham 2002	BIRDS	ABUNDANCE BY SPECIES	1	0	28
Rodewald & Brittingham 2002	BIRDS	RICHNESS/DIVERSITY			1
Rosenberg & Raphael 1986	BIRDS	ABUNDANCE BY SPECIES	13	9	23
Rosenberg & Raphael 1986	HERPS	ABUNDANCE BY SPECIES		1	4
Rosenberg & Raphael 1986	MAMMALS	ABUNDANCE BY SPECIES	3	4	11
Ross et al. 1997	BIRDS	ABUNDANCE BY SPECIES	1		
Schlaepfer & Gavin 2001	HERPS	ABUNDANCE BY SPECIES		2	4
Sisk et al. 1997	BIRDS	ABUNDANCE BY SPECIES	8	3	6
Sizer & Tanner 1999	ABIOTIC	ABIOTIC	2		
Small & Hunter 1989	BIRDS	RICHNESS/DIVERSITY			1
Smedshaug et al. 2002	BIRDS	ABUNDANCE BY SPECIES	1		
Sparks et al. 1994	BIRDS	ABUNDANCE BY SPECIES			1
Stevens & Husband 1998	ABIOTIC	ABIOTIC	2	1	
Stevens & Husband 1998	MAMMALS	RICHNESS/DIVERSITY			1
Strelke & Dickson 1980	BIRDS	RICHNESS/DIVERSITY	1		
Strøm & Sonerud 2001	BIRDS	ABUNDANCE BY SPECIES	1		
Takada et al. 2002	PLANTS	RICHNESS/DIVERSITY			1
Van Dongen & Scott 2002	INVERTS	ABUNDANCE BY SPECIES		1	
Van Horn et al. 1995	BIRDS	ABUNDANCE BY SPECIES			1
Van Wilgenburg et al. 2001	ABIOTIC	ABIOTIC	1	1	
Vernes et al. 1995	MAMMALS	ABUNDANCE BY SPECIES			1
Walter et al. 1998	INVERTS	ABUNDANCE BY SPECIES	1		
Weathers et al. 1995	ABIOTIC	ABIOTIC	1		
Weathers et al. 2001	ABIOTIC	ABIOTIC			5
Wenny et al. 1993	BIRDS	ABUNDANCE BY SPECIES	1	1	

Whitaker & Montevecchi 1997	BIRDS	ABUNDANCE BY SPECIES	1	2	31	
Wolf & Batzli 2002	MAMMALS	ABUNDANCE BY SPECIES				1
Young & Mitchell 1994	ABIOTIC	ABIOTIC				2

Appendix 1b. Papers used to test predictions generated from the model illustrated in Fig. 4. Information on habitat associations was taken from each paper. Predictions and the number of positive, negative and neutral results for each study. Counts indicate number of those outcomes (by species). One study that reported both a positive and negative result for one species was excluded. Multiple records indicate a single study reported results for species that have different habitat associations.

Citation	Taxon	Habitat Association	Prediction	Pos Results	Neg Results	NR Results
Arévalo 2002	PLANTS	Focal	Neg	1	1	
Berg & Berg 1998	MAMMALS	Focal	Neg	1		
Chang et al. 1995	MAMMALS	Both	Pos/NR	2		
Crooks 2002	MAMMALS	Adjacent	Pos	1		
Cummings & Vessey 1994	MAMMALS	Both	Pos/NR	1		
Derge & Yahner 2000	MAMMALS	Both	Pos/NR	1		
Derge & Yahner 2000	MAMMALS	Focal	Neg		1	
Hayward et al. 1999	MAMMALS	Adjacent	Pos	1		
Hayward et al. 1999	MAMMALS	Focal	Neg	1		
Jules 1998	PLANTS	Focal	Neg		1	
King et al. 1998	MAMMALS	Focal	Neg	2		
Kingston & Morris 2000	MAMMALS	Both	Pos/NR			1
Laurance et al. 1998	PLANTS	Adjacent	Pos	1		
Laurance et al. 1998	PLANTS	Focal	Neg			1
Manson & Stiles 1998	MAMMALS	Both	Pos/NR	2		
Manson et al. 1999	MAMMALS	Both	Pos/NR	1		
Manson et al. 2001	MAMMALS	Both	Pos/NR	1		
Manson et al. 2001	MAMMALS	Focal	Neg		1	
Mills 1995	MAMMALS	Focal	Neg		1	
Nickel et al. 2003	MAMMALS	Focal	Neg		1	
Palik & Murphy 1990	PLANTS	Focal	Neg		1	
Robitaille & Aubry 2000	MAMMALS	Focal	Neg		1	
Russel et al. 2001	MAMMALS	Adjacent	Pos	1		
Russel et al. 2001	MAMMALS	Focal	Neg		1	
Wahungu et al. 2001	MAMMALS	Both	Pos/NR	1		
Wolf & Batzli 2002	MAMMALS	Focal	Neg		1	
Young et al. 1995	PLANTS	Adjacent	Pos	3		
Young et al. 1995	PLANTS	Focal	Neg		3	

Appendix 1c. Papers used to explore how different factors (orientation, temporal, and fragmentation) interact to influence edge responses. The outcome indicates how edge responses were influenced (**No effect**, a significant edge responses was not expressed, an edge response changed **strength**, or **direction**). For studies that examined orientation, whether edge responses were expressed or stronger on north or south edges is also indicated. More than one record indicates a study that stratified results based on more than one factor.

Citation	TAXON	Interaction type	Category <sup>1</sup>	Outcome	Number of Outcomes
Altendorf et al. 2001	MAMMALS	TEMPORAL	YEAR	EXPRESSION	2
Bayne & Hobson 1998	MAMMALS	TEMPORAL	YEAR	NO EFFECT	8
Bowers & Dooley 1993	MAMMALS	FRAGMENTATION	PATCHSIZE	STRENGTH	1
Brosofske et al. 1997	ABIOTIC	TEMPORAL	TIME OF DAY	EXPRESSION	2
Brosofske et al. 1997	ABIOTIC	TEMPORAL	TIME OF DAY	NO EFFECT	2
Brosofske et al. 1997	ABIOTIC	TEMPORAL	TIME OF DAY	STRENGTH	4
Brothers 1993	PLANTS	ORIENTATION	N Hemisphere	EXPRESSED ON N EDGE	1
Brothers 1993	PLANTS	ORIENTATION	N Hemisphere	EXPRESSED ON S EDGE	7
Brothers 1993	PLANTS	ORIENTATION	N Hemisphere	NO EFFECT	7
Brotons et al. 2001	BIRDS	ORIENTATION	N Hemisphere	NO EFFECT	1
Carvalho & Vasconcelos 1999	PLANTS	FRAGMENTATION	FRAG	EXPRESSION	1
Carvalho & Vasconcelos 1999	PLANTS	FRAGMENTATION	FRAG	NO EFFECT	3
Chalfoun et al. 2002	MAMMALS	TEMPORAL	YEAR	DIRECTION	1
Chalfoun et al. 2002	MAMMALS	TEMPORAL	YEAR	NO EFFECT	3
Chalfoun et al. 2002	MAMMALS	TEMPORAL	YEAR	STRENGTH	1
Chen et al. 1995	ABIOTIC	TEMPORAL	TIME OF DAY	STRENGTH	4
Clarke et al. 1995	MAMMALS	FRAGMENTATION	PATCHSIZE	EXPRESSION	1
Confer & Orloff 1990	INVERTS	ORIENTATION	N Hemisphere	EXPRESSED ON S EDGE	3
Confer & Orloff 1990	INVERTS	ORIENTATION	N Hemisphere	NO EFFECT	1
Cummings & Vessey 1994	MAMMALS	TEMPORAL	SEASON	EXPRESSION	1
Cummings & Vessey 1994	MAMMALS	TEMPORAL	SEASON	NO EFFECT	1
Darveau et al. 2001	MAMMALS	FRAGMENTATION	PATCHSIZE	EXPRESSION	2
Darveau et al. 2001	MAMMALS	TEMPORAL	YEAR	EXPRESSION	1
Darveau et al. 2001	MAMMALS	TEMPORAL	YEAR	NO EFFECT	1
DeGraaf & Yamasaki 2002	HERPS	TEMPORAL	YEAR	EXPRESSION	1
Diaz et al. 1999	PLANTS	TEMPORAL	YEAR	EXPRESSION	1
Didham & Lawton 1999	ABIOTIC	FRAGMENTATION	FRAG	DIRECTION	1
Didham & Lawton 1999	ABIOTIC	FRAGMENTATION	FRAG	EXPRESSION	1
Didham & Lawton 1999	ABIOTIC	FRAGMENTATION	FRAG	STRENGTH	1
Didham & Lawton 1999	PLANTS	FRAGMENTATION	FRAG	NO EFFECT	4
Didham 1998	PLANTS	FRAGMENTATION	FRAG	DIRECTION	1

Dignan & Bren 2003	ABIOTIC	ORIENTATION	S Hemisphere	EXPRESSED ON N EDGE	1
Dijak & Thompson 2000	MAMMALS	TEMPORAL	YEAR	EXPRESSION	1
Dijak & Thompson 2000	MAMMALS	TEMPORAL	YEAR	NO EFFECT	1
Donoso et al. 2003	PLANTS	FRAGMENTATION	PATCHSIZE	STRENGTH	1
Donovan et al. 1997	BIRDS	FRAGMENTATION	FRAG	EXPRESSION	1
Dyer & Landis 1997	INVERTS	TEMPORAL	GENERATION	EXPRESSION	2
Dyer & Landis 1997	INVERTS	TEMPORAL	GENERATION	NO EFFECT	2
Dyer & Landis 1997	INVERTS	TEMPORAL	YEAR	DIRECTION	1
Dyer & Landis 1997	INVERTS	TEMPORAL	YEAR	NO EFFECT	3
Fletcher & Koford 2003	BIRDS	TEMPORAL	YEAR	NO EFFECT	6
Fletcher 2003	BIRDS	TEMPORAL	YEAR	NO EFFECT	2
Fraver 1994	PLANTS	ORIENTATION	N Hemisphere	EXPRESSED ON S EDGE	3
Fraver 1994	PLANTS	ORIENTATION	N Hemisphere	NO EFFECT	7
Fraver 1994	PLANTS	ORIENTATION	N Hemisphere	STRONGER ON S EDGE	6
Gagnon et al. 2003	ABIOTIC	ORIENTATION	N Hemisphere	STRONGER ON S EDGE	1
Gagnon et al. 2003	PLANTS	ORIENTATION	N Hemisphere	NO EFFECT	2
Gagnon et al. 2003	PLANTS	TEMPORAL	YEAR	NO EFFECT	3
Galetti et al. 2003	PLANTS	FRAGMENTATION	PATCHSIZE	NO EFFECT	1
Goosem 2000	MAMMALS	ORIENTATION	S Hemisphere	NO EFFECT	2
Goosem 2000	MAMMALS	ORIENTATION	S Hemisphere	EXPRESSION	1
Haddad & Baum 1999	INVERTS	FRAGMENTATION	CORR	NO EFFECT	1
Haddad & Baum 1999	INVERTS	FRAGMENTATION	CORR	STRENGTH	3
Haddad & Baum 1999	INVERTS	TEMPORAL	YEAR	EXPRESSION	1
Haddad & Baum 1999	INVERTS	TEMPORAL	YEAR	NO EFFECT	3
Harris & Reed 2002	BIRDS	TEMPORAL	YEAR	EXPRESSION	1
Harris & Reed 2002	BIRDS	TEMPORAL	YEAR	NO EFFECT	2
Hayward et al. 1999	MAMMALS	TEMPORAL	YEAR	NO EFFECT	1
Hayward et al. 1999	MAMMALS	TEMPORAL	YEAR	STRENGTH	1
Hester & Baillie 1998	PLANTS	TEMPORAL	YEAR	NO EFFECT	1
Hester & Baillie 1998	PLANTS	TEMPORAL	YEAR	STRENGTH	1
Honnay et al. 2002	ABIOTIC	ORIENTATION	N Hemisphere	EXPRESSED ON S EDGE	2
Honnay et al. 2002	ABIOTIC	ORIENTATION	N Hemisphere	NO EFFECT	2
Honnay et al. 2002	PLANTS	ORIENTATION	N Hemisphere	EXPRESSED ON N EDGE	1
Honnay et al. 2002	PLANTS	ORIENTATION	N Hemisphere	EXPRESSED ON S EDGE	2
Honnay et al. 2002	PLANTS	ORIENTATION	N Hemisphere	NO EFFECT	9
Hovland et al. 1999	MAMMALS	FRAGMENTATION	FRAG	EXPRESSION	1
Irby & Apperson 1992	INVERTS	TEMPORAL	YEAR	EXPRESSION	5
Irby & Apperson 1992	INVERTS	TEMPORAL	YEAR	NO EFFECT	16
Irby & Apperson 1992	INVERTS	TEMPORAL	YEAR	STRENGTH	1
Jacob & Brown 2000	MAMMALS	TEMPORAL	TIME OF DAY	DIRECTION	1
Jacob & Brown 2000	MAMMALS	TEMPORAL	TIME OF DAY	NO EFFECT	1

Johnson & Temple 1986	BIRDS	FRAGMENTATION	PATCHSIZE	NO EFFECT	5
Johnson & Temple 1986	BIRDS	TEMPORAL	YEAR	NO EFFECT	5
Kolbe & Janzen 2002		TEMPORAL	YEAR	EXPRESSION	3
Kolbe & Janzen 2002		TEMPORAL	YEAR	NO EFFECT	1
Kremsater & Bunnell 1992	MAMMALS	FRAGMENTATION	FRAG	EXPRESSION	1
Landenberger & Ostergren 2002	ABIOTIC	ORIENTATION	N Hemisphere	NO EFFECT	1
Landenberger & Ostergren 2002	PLANTS	ORIENTATION	N Hemisphere	NO EFFECT	1
Macdonald et al. 2000	MAMMALS	TEMPORAL	SEASON	NO EFFECT	1
Macdonald et al. 2000	MAMMALS	TEMPORAL	YEAR	NO EFFECT	1
Manson & Stiles 1998	MAMMALS	TEMPORAL	MONTH	EXPRESSION	2
Manson & Stiles 1998	MAMMALS	TEMPORAL	TIME OF DAY	NO EFFECT	1
Matlack 1993	ABIOTIC	ORIENTATION	N Hemisphere	EXPRESSED ON S EDGE	3
Matlack 1993	ABIOTIC	ORIENTATION	N Hemisphere	NO EFFECT	3
Matlack 1993	PLANTS	ORIENTATION	N Hemisphere	EXPRESSED ON S EDGE	1
Matlack 1993	PLANTS	ORIENTATION	N Hemisphere	NO EFFECT	1
McKone et al. 2001	INVERTS	TEMPORAL	MONTH	EXPRESSION	1
McKone et al. 2001	INVERTS	TEMPORAL	MONTH	STRENGTH	2
Meiners & LoGiudice 2003	PLANTS	TEMPORAL	YEAR	NO EFFECT	2
Meiners et al. 2000	PLANTS	TEMPORAL	YEAR	EXPRESSION	11
Meiners et al. 2000	PLANTS	TEMPORAL	YEAR	NO EFFECT	1
Meyer et al. 2001	ABIOTIC	TEMPORAL	TIME OF DAY	EXPRESSION	2
Meyer et al. 2001	ABIOTIC	TEMPORAL	TIME OF DAY	NO EFFECT	2
Mills 1995	MAMMALS	FRAGMENTATION	PATCHSIZE	NO EFFECT	1
Moen & Jonsson 2003	NON-VASC	FRAGMENTATION	PATCHSIZE	EXPRESSION	1
Moen & Jonsson 2003	NON-VASC	FRAGMENTATION	PATCHSIZE	NO EFFECT	25
Morris 1997	MAMMALS	FRAGMENTATION	FRAG	NO EFFECT	1
Norris et al. 2000	BIRDS	FRAGMENTATION	PATCHSIZE	NO EFFECT	1
Palik & Murphy 1990	PLANTS	ORIENTATION	N Hemisphere	NO EFFECT	2
Restrepo et al. 1999	PLANTS	TEMPORAL	SEASON	NO EFFECT	1
Ries & Fagan 2003	INVERTS	TEMPORAL	YEAR	EXPRESSION	1
Ries & Fagan 2003	INVERTS	TEMPORAL	YEAR	NO EFFECT	5
Roach et al. 2001	PLANTS	TEMPORAL	YEAR	DIRECTION	1
Roach et al. 2001	PLANTS	TEMPORAL	YEAR	EXPRESSION	1
Schlaepfer & Gavin 2001	HERPS	FRAGMENTATION	PATCHSIZE	NO EFFECT	7
Schlaepfer & Gavin 2001	HERPS	TEMPORAL	SEASON	DIRECTION	3
Schlaepfer & Gavin 2001	HERPS	TEMPORAL	SEASON	NO EFFECT	4
Sparks et al. 1994	BIRDS	TEMPORAL	SEASON	EXPRESSION	1
Vernes et al. 1995	MAMMALS	TEMPORAL	TIME OF DAY	DIRECTION	1
Wahungu et al. 2001	MAMMALS	TEMPORAL	SEASON	NO EFFECT	3
Wahungu et al. 2001	MAMMALS	TEMPORAL	TIME OF DAY	EXPRESSION	1
Wahungu et al. 2001	MAMMALS	TEMPORAL	TIME OF DAY	NO EFFECT	2

Walter et al. 1998	INVERTS	TEMPORAL	SEASON	EXPRESSION	1
Weathers et al. 2001	ABIOTIC	TEMPORAL	MONTH	DIRECTION	1
Weathers et al. 2001	ABIOTIC	TEMPORAL	MONTH	NO EFFECT	12
Weathers et al. 2001	ABIOTIC	TEMPORAL	MONTH	STRENGTH	1
Wolf & Batzli 2002	MAMMALS	TEMPORAL	MONTH	EXPRESSION	2
Wolf & Batzli 2002	MAMMALS	TEMPORAL	MONTH	NO EFFECT	2
Young & Mitchell 1994	ABIOTIC	ORIENTATION	S Hemisphere	NO EFFECT	1
Young & Mitchell 1994	ABIOTIC	ORIENTATION	S Hemisphere	STRONGER ON N EDGE	2
Young & Mitchell 1994	ABIOTIC	ORIENTATION	S Hemisphere	STRONGER ON S EDGE	3
Young & Mitchell 1994	ABIOTIC	TEMPORAL	SEASON	EXPRESSION	4
Young & Mitchell 1994	ABIOTIC	TEMPORAL	SEASON	NO EFFECT	1
Young & Mitchell 1994	ABIOTIC	TEMPORAL	SEASON	STRENGTH	1

<sup>1</sup> Studies were separated into categories for each interactant. Temporal studies stratified analysis based on time of day, month, season or year. Fragmentation studies stratified by patch size, level of fragmentation (FRAG), or the presence of a corridor (CORR). We separated studies based on hemisphere (N or S).

Appendix 1d. The range of depths of edge influence (DEI) within each study, reported in meters.

Citation	TAXON	DEI Range (m)
Brand & George 2001	BIRDS	85-140
Brosofske et al. 1997	ABIOTIC	15-60
Burke & Nol 1998a	ABIOTIC	5
Burke & Nol 1998b	PLANTS	0-50
Cadenasso et al. 1997	ABIOTIC	0-20
Chen et al. 1995	ABIOTIC	0-240
Chen et al. 1992	PLANTS	25-125
Davies et al. 2001	INVERTS	20-100
Didham & Lawton 1999	ABIOTIC	5-185
Didham & Lawton 1999	PLANTS	5-75
Dignan & Bren 2003	ABIOTIC	5-50
Fletcher 2003	BIRDS	80-120
Fox et al. 1997	PLANTS	9-15
Fraver 1994	PLANTS	0-60
Hansen et al. 1993	PLANTS	20
Harper & MacDonald 2001	PLANTS	0-150
Haskell 2000	ABIOTIC	15
Haskell 2000	INVERTS	>100
Honnay et al. 2002	ABIOTIC	0-15
Honnay et al. 2002	PLANTS	0-15
Kapos et al. 1993	ABIOTIC	40
Kapos et al. 1993	PLANTS	20-60
Kollmann & Buschor 2002	PLANTS	5-25
Kunin 1998	ABIOTIC	<1
Mancke & Gavin 2000	BIRDS	15-200
Matlack 1993	ABIOTIC	10-50
Matlack 1993	PLANTS	40
McKone et al. 2001	INVERTS	10-90
Morgan 1998	ABIOTIC	10
Morgan 1998	PLANTS	10-50
Palik & Murphy 1990	PLANTS	10-20
Peltonen 1999	PLANTS	5-10

Piper & Catteral 2003	BIRDS	200
Ranney et al. 1981	PLANTS	15-30
Restrepo et al. 1999	BIRDS	100
Restrepo et al. 1999	PLANTS	10-30
Rheault et al. 2003	PLANTS	5-100
Rose & Fairweather 1997	PLANTS	30
Russell & Jones 2001	PLANTS	40-200
Sizer & Tanner 1999	ABIOTIC	50
Sizer & Tanner 1999	PLANTS	10
Small & Hunter 1989	BIRDS	60-90
Stevens & Husband 1998	ABIOTIC	40-80
Stroud et al. 1990	BIRDS	400
Toms & Lesperance 2003	PLANTS	40-50
Van Horn et al. 1995	BIRDS	300
Van Wilgenburg et al. 2001	ABIOTIC	40-60
Wahungu et al. 1999	PLANTS	2
Walter et al. 1998	INVERTS	50
Watkins et al. 2003	ABIOTIC	5-15
Watkins et al. 2003	PLANTS	5-15
Wenny et al. 1993	BIRDS	200
Young & Mitchell 1994	ABIOTIC	10-100
Young et al. 1995	ABIOTIC	15-100
Young et al. 1995	PLANTS	50-200

## Literature Cited

- Altendorf KB, Laundré JW, González CAL, Brown JS. 2001. Assessing effects of predation risk on foraging behavior of mule deer. *J. Mammal.* 82: 430-9.
- Arévalo JR. 2002. Distribution of trees and saplings at the edge of cross timbers forests, Oklahoma, USA. *Nat. Areas J.* 22: 99-107.
- Baker J, French K, Whelan RJ. 2002. The edge effect and ecotonal species: bird communities across a natural edge in southeastern Australia. *Ecology* 83: 3048-59.
- Bayne EM, Hobson KA. 1998. The effects of habitat fragmentation by forestry and agriculture on the abundance of small mammals in the southern boreal mixedwood forest. *Can. J. Zool.* 76: 62-9.
- Beier P, Van Drielen M, Kankam BO. 2002. Avifaunal collapse in west African forest fragments. *Conserv. Biol.* 16: 1097-111.
- Berg L, Berg A. 1998. Nest site selection by the dormouse *Muscardinus avellanarius* in two different landscapes. *Ann. Zool. Fenn.* 35: 115-22.
- Bergman KO. 1999. Habitat utilization by *Lopinga achine* (Nymphalidae : Satyrinae) larvae and ovipositing females: implications for conservation. *Biol. Conserv.* 88: 69-74.
- Berry L. 2001. Edge effects on the distribution and abundance of birds in a southern Victorian forest. *Wildl. Res.* 28: 239-45.
- Biek R, Mills LS, Bury RB. 2002. Terrestrial and stream amphibians across clearcut-forest interfaces in the Siskiyou mountains, Oregon. *Northwest Sci.* 76: 129-40.
- Bowers MA, Dooley JL. 1993. Predation hazard and seed removal by small mammals - microhabitat versus patch scale effects. *Oecologia* 94: 247-54.
- Brand LA, George TL. 2001. Response of passerine birds to forest edge in coast redwood forest fragments. *Auk* 118: 678-86.
- Brosofske KD, Chen J, Naiman RJ, Franklin JF. 1997. Harvesting effects on microclimatic gradients from small streams to uplands in western Washington. *Ecol. Appl.* 7: 1188-200.
- Brothers TS. 1993. Fragmentation and edge effects in central Indiana old-growth forests. *Nat. Areas J.* 13: 268-75.
- Brothers TS, Spingarn A. 1992. Forest fragmentation and alien plant invasion of central Indiana old-growth forests. *Conserv. Biol.* 6: 91-100.
- Brotons L, Desrochers A, Turcotte Y. 2001. Food hoarding behaviour of black-capped chickadees (*Poecile atricapillus*) in relation to forest edges. *Oikos* 95: 511-9.
- Burger AE, Bahn V, Tillmanns ARM. 2000. Comparison of coastal fringe and interior forests as reserves for marbled murrelets on Vancouver Island. *Condor* 102: 915-20.
- Burke DM, Nol E. 1998a. Edge and fragment size effects on the vegetation of deciduous forests in Ontario, Canada. *Nat. Areas J.* 18: 45-53.

- Burke DM, Nol E. 1998b. Influence of food abundance, nest-site habitat, and forest fragmentation on breeding ovenbirds. *Auk* 115: 96-104.
- Cadenasso ML, Traynor MM, Pickett STA. 1997. Functional location of forest edges: gradients of multiple physical factors. *Can. J. For. Res.* 27: 774-82.
- Camargo JLC, Kapos V. 1995. Complex edge effects on soil moisture and microclimate in central Amazonian forest. *J. Tropical Ecol.* 11: 205-21.
- Campi MJ, Mac Nally R. 2001. Birds on edge: avian assemblages along forest-agricultural boundaries of central Victoria, Australia. *Anim. Conserv.* 4: 121-32.
- Carvalho KS, Vasconcelos HL. 1999. Forest fragmentation in central Amazonia and its effects on litter-dwelling ants. *Biol. Conserv.* 91: 151-7.
- Chalfoun AD, Ratnaswamy MJ, Thompson FR. 2002. Songbird nest predators in forest-pasture edge and forest interior in a fragmented landscape. *Ecol. Appl.* 12: 858-67.
- Chang KT, Verbyla DL, Yeo JJ. 1995. Spatial analysis of habitat selection by sitka black-tailed deer in southeast Alaska, USA. *Environ. Manage.* 19: 579-89.
- Chen J, Franklin JF, Spies TA. 1992. Vegetation responses to edge environments in old-growth douglas-fir forests. *Ecol. Appl.* 2: 387-96.
- Chen J, Franklin JF, Spies TA. 1995. Growing-season microclimatic gradients from clear-cut edges into old-growth douglas-fir forests. *Ecol. Appl.* 5: 74-86.
- Clarke JL, Welch D, Gordon IJ. 1995. The influence of vegetation pattern on the grazing of heather moorland by red deer and sheep .1. The location of animals on grass heather mosaics. *J. Appl. Ecol.* 32: 166-76.
- Confer JL, Orloff J. 1990. Spatial distribution of the goldenrod ball gall insects. *Great Lakes Ent.* 23: 33-7.
- Crooks KR. 2002. Relative sensitivities of mammalian carnivores to habitat fragmentation. *Conserv. Biol.* 16: 488-502.
- Cummings JR, Vessey SH. 1994. Agricultural influences on movement patterns of white-footed mice (*Peromyscus leucopus*). *Am. Midl. Nat.* 132: 209-18.
- Dale S, Mork K, Solvang R, Plumptre AJ. 2000. Edge effects on the understory bird community in a logged forest in Uganda. *Conserv. Biol.* 14: 265-76.
- Darveau M, Labbe P, Beauchesne P, Belanger L, Huot J. 2001. The use of riparian forest strips by small mammals in a boreal balsam fir forest. *For. Ecol. Manage.* 143: 95-104.
- Davies KF, Melbourne BA, Margules CR. 2001. Effects of within- and between-patch processes on community dynamics in a fragmentation experiment. *Ecology* 82: 1830-46.
- DeGraaf RM, Yamasaki M. 2002. Effects of edge contrast on redback salamander distribution in even-aged northern hardwoods. *For. Sci.* 48: 351-63.
- de Maynadier PG, Hunter ML. 1998. Effects of silvicultural edges on the distribution and abundance of amphibians in Maine. *Conserv. Biol.* 12: 340-52.
- Derge KL, Yahner RH. 2000. Ecology of sympatric fox squirrels (*Sciurus niger*) and gray squirrels (*S.*

*carolinensis*) at forest-farmland interfaces of Pennsylvania. *Am. Midl. Nat.* 143: 355-69.

Desrochers A, Fortin MJ. 2000. Understanding avian responses to forest boundaries: a case study with chickadee winter flocks. *Oikos* 91: 376-84.

Diaz I, Papic C, Armesto JJ. 1999. An assessment of post-dispersal seed predation in temperate rain forest fragments in Chiloe Island, Chile. *Oikos* 87: 228-38.

Didham RK. 1998. Altered leaf-litter decomposition rates in tropical forest fragments. *Oecologia* 116: 397-406.

Didham RK, Hammond PM, Lawton JH, Eggleton P, Stork NE. 1998. Beetle species responses to tropical forest fragmentation. *Ecol. Monogr.* 68: 295-323.

Didham RK, Lawton JH. 1999. Edge structure determines the magnitude of changes in microclimate and vegetation structure in tropical forest fragments. *Biotropica* 31: 17-30.

Dignan P, Bren L. 2003. A study of the effect of logging on the understory light environment in riparian buffer strips in a southeast Australian forest. *For. Ecol. Manage.* 172: 161-72.

Dijak WD, Thompson FR. 2000. Landscape and edge effects on the distribution of mammalian predators in Missouri. *J. Wildl. Manage.* 64: 209-16.

Donoso DS, Grez AA, Simonetti JA. 2003. Effects of forest fragmentation on the granivory of differently sized seeds. *Biol. Conserv.* 115: 63-70.

Donovan TM, Jones PW, Annand EM, Thompson FR. 1997. Variation in local-scale edge effects: mechanisms and landscape context. *Ecology* 78: 2064-75.

Downie IS, Coulson JC, Butterfield JEL. 1996. Distribution and dynamics of surface-dwelling spiders across a pasture-plantation ecotone. *Ecography* 19: 29-40.

Dyer LE, Landis DA. 1997. Influence of noncrop habitats on the distribution of *Eriborus terebrans* (Hymenoptera: Ichneumonidae) in cornfields. *Environ. Ent.* 26: 924-32.

Euskirchen ES, Chen J, Bi RC. 2001. Effects of edges on plant communities in a managed landscape in northern Wisconsin. *For. Ecol. Manage.* 148: 93-108.

Evans DR, Gates JE. 1997. Cowbird selection of breeding areas: the role of habitat and bird species abundance. *Wilson Bull.* 109: 470-80.

Flaspohler DJ, Temple SA, Rosenfield RN. 2001a. Effects of forest edges on ovenbird demography in a managed forest landscape. *Conserv. Biol.* 15: 173-83.

Flaspohler DJ, Temple SA, Rosenfield RN. 2001b. Species-specific edge effects on nest success and breeding bird density in a forested landscape. *Ecol. Appl.* 11: 32-46.

Fletcher RJ, Koford RR. 2003. Spatial responses of bobolinks (*Dolichonyx oryzivorus*) near different types of edges in northern Iowa. *Auk* 120: 799-810.

Fletcher RJ. 2003. *Spatial and temporal scales of distribution and demography in breeding birds: implications of fragmentation and restoration*. Ph.D. thesis. Iowa State Univ. Ames.

Fox BJ, Taylor JE, Fox MD, Williams C. 1997. Vegetation changes across edges of rainforest remnants. *Biol.*

- Fraver S. 1994. Vegetation responses along edge-to-interior gradients in the mixed hardwood forests of the Roanoke River Basin, North Carolina. *Conserv. Biol.* 8: 822-32.
- French BW, Elliott NC. 1999. Spatial and temporal distribution of ground beetle (Coleoptera : Carabidae) assemblages in riparian strips and adjacent wheat fields. *Environ. Ent.* 28: 597-607.
- Gagnon JL, Jokela EJ, Moser WK, Huber DA. 2003. Dynamics of artificial regeneration in gaps within a longleaf pine flatwoods ecosystem. *For. Ecol. Manage.* 172: 133-44.
- Galetti M, Alves-Costa CP, Cazetta E. 2003. Effects of forest fragmentation, anthropogenic edges and fruit colour on the consumption of ornithocoric fruits. *Biol. Conserv.* 111: 269-73.
- Garcia FJ, Diaz M, de Alba JM, Alonso CL, Carbonell R, et al. 1998. Edge effects and patterns of winter abundance of wood mice *Apodemus sylvaticus* in Spanish fragmented forests. *Acta Theriol.* 43: 255-62.
- Gascon C. 1993. Breeding-habitat use by five Amazonian frogs at forest edge. *Biodivers. Conserv.* 2: 438-44.
- Germaine SS, Vessey SH, Capen DE. 1997. Effects of small forest openings on the breeding bird community in a Vermont hardwood forest. *Condor* 99: 708-18.
- Gooseem M. 2000. Effects of tropical rainforest roads on small mammals: edge changes in community composition. *Wildl. Res.* 27: 151-63.
- Grindal SD, Brigham RM. 1999. Impacts of forest harvesting on habitat use by foraging insectivorous bats at different spatial scales. *Ecoscience* 6: 25-34.
- Haddad NM, Baum KA. 1999. An experimental test of corridor effects on butterfly densities. *Ecol. Appl.* 9: 623-33.
- Hansen AJ, Garman SL, Lee P, Horvath E. 1993. Do edge effects influence tree growth rates in douglas-fir plantations? *Northwest Sci.* 67: 112-6.
- Harper KA, MacDonald SE. 2001. Structure and composition of riparian boreal forest: new methods for analyzing edge influence. *Ecology* 82: 649-59.
- Harris RJ, Reed JM. 2002. Effects of forest-clearcut edges on a forest-breeding songbird. *Can. J. Zool.* 80: 1026-37.
- Haskell DG. 2000. Effects of forest roads on macroinvertebrate soil fauna of the southern Appalachian mountains. *Conserv. Biol.* 14: 57-63.
- Hayward GD, Henry SH, Ruggiero LF. 1999. Response of red-backed voles to recent patch cutting in subalpine forest. *Conserv. Biol.* 13: 168-76.
- Heliölä J, Koivula M, Niemelä J. 2001. Distribution of carabid beetles (Coleoptera, Carabidae) across a boreal forest-clearcut ecotone. *Conserv. Biol.* 15: 370-7.
- Heske EJ. 1995. Mammalian abundances on forest-farm edges versus forest interiors in southern Illinois: is there an edge effect? *J. Mammal.* 76: 562-8.
- Hester AJ, Baillie GJ. 1998. Spatial and temporal patterns of heather use by sheep and red deer within natural heather/grass mosaics. *J. Appl. Ecol.* 35: 772-84.

- Honnay O, Verheyen K, Hermy M. 2002. Permeability of ancient forest edges for weedy plant species invasion. *For. Ecol. Manage.* 161: 109-22.
- Hovland N, Andreassen HP, Ims RA. 1999. Foraging behaviour of the root vole *Microtus oeconomus* in fragmented habitats. *Oecologia* 121: 236-44.
- Huhta E, Jokimäki J, Rahko P. 1999. Breeding success of pied flycatchers in artificial forest edges: the effect of a suboptimally shaped foraging area. *Auk* 116: 528-35.
- Irby WS, Apperson CS. 1992. Spatial and temporal distribution of resting female mosquitos (Diptera, Culicidae) in the coastal plain of North Carolina. *J. Med. Entomol.* 29: 150-9.
- Jacob J, Brown JS. 2000. Microhabitat use, giving-up densities and temporal activity as short- and long-term anti-predator behaviors in common voles. *Oikos* 91: 131-8.
- Johnson RG, Temple SA. 1986. Assessing habitat quality for birds nesting in fragmented tallgrass prairies. In *Wildlife 2000: Modeling habitat relationships in terrestrial vertebrates*, ed. J Verner, ML Morrison, CJ Ralph. Madison: University of Wisconsin Press
- Jules ES. 1998. Habitat fragmentation and demographic change for a common plant: trillium in old-growth forest. *Ecology* 79: 1645-56.
- Kapos V, Ganade G, Matsui E, Victoria RL. 1993. <sup>13</sup>C as an indicator of edge effects in tropical rainforest reserves. *J. Ecol.* 81: 425-32.
- King DI, Griffin CR, DeGraaf RM. 1997. Effect of clearcut borders on distribution and abundance of forest birds in northern New Hampshire. *Wilson Bull.* 109: 239-45.
- King DI, Griffin CR, DeGraaf RM. 1998. Nest predator distribution among clearcut forest, forest edge and forest interior in an extensively forested landscape. *For. Ecol. Manage.* 104: 151-6.
- Kingston SR, Morris DW. 2000. Voles looking for an edge: habitat selection across forest ecotones. *Can. J. Zool.* 78: 2174-83.
- Kolbe JJ, Janzen FJ. 2002. Spatial and temporal dynamics of turtle nest predation: edge effects. *Oikos* 99: 538-44.
- Kollmann J, Buschor M. 2002. Edges effects on seed predation by rodents in deciduous forests of northern Switzerland. *Plant Ecol.* 164: 249-61.
- Kremsater LL, Bunnell FL. 1992. Testing responses to forest edges: the example of black-tailed deer. *Can. J. Zool.* 70: 2426-35.
- Krüger SC, Lawes MJ. 1997. Edge effects at an induced forest-grassland boundary: forest birds in the Ongoye Forest Reserve, Kwazulu-Natal. *S. Afr. J. Zool.* 32: 82-91.
- Kunin WE. 1998. Biodiversity at the edge: a test of the importance of spatial "mass effects" in the Rothamsted Park Grass experiments. *Proc. Natl. Acad. Sci. U S A* 95: 207-12.
- Landenberger RE, Ostergren DA. 2002. *Eupatorium rugosum* (Asteraceae) flowering as an indicator of edge effect from clearcutting in mixed-mesophytic forest. *For. Ecol. Manage.* 155: 55-68.
- Laurance WF, Ferreira LV, Rankin-de Merona JM, Laurance SG, Hutchings RW, Lovejoy TE. 1998. Effects

- of forest fragmentation on recruitment patterns in amazonian tree communities. *Conserv. Biol.* 12: 460-4.
- Lopez de Casenave J, Pelotto JP, Caziani SM, Mermoz M, Protomastro J. 1998. Responses of avian assemblages to a natural edge in a chaco semiarid forest in Argentina. *Auk* 115: 425-35.
- Lopez de Casenave J, Pelotto JP, Protomastro J. 1995. Edge-interior differences in vegetation structure and composition in a chaco semiarid forest, Argentina. *For. Ecol. Manage.* 72: 61-9.
- Macdonald DW, Tew TE, Todd IA, Garner JP, Johnson PJ. 2000. Arable habitat use by wood mice (*Apodemus sylvaticus*). 3. A farm-scale experiment on the effects of crop rotation. *J. Zool.* 250: 313-20.
- Majer JD, Delabie JHC, McKenzie NL. 1997. Ant litter fauna of forest, forest edges and adjacent grassland in the Atlantic rain forest region of Bahia, Brazil. *Insect. Soc.* 44: 255-66.
- Major RE, Christie FJ, Gowing G, Cassis G, Reid CAM. 2003. The effect of habitat configuration on arboreal insects in fragmented woodlands of south-eastern Australia. *Biol. Conserv.* 113: 35-48.
- Mancke RG, Gavin TA. 2000. Breeding bird density in woodlots: effects of depth and buildings at the edges. *Ecol. Appl.* 10: 598-611.
- Manson RH, Ostfeld RS, Canham CD. 1999. Responses of a small mammal community to heterogeneity along forest-old-field edges. *Landsc. Ecol.* 14: 355-67.
- Manson RH, Ostfeld RS, Canham CD. 2001. Long-term effects of rodent herbivores on tree invasion dynamics along forest-field edges. *Ecology* 82: 3320-9.
- Manson RH, Stiles EW. 1998. Links between microhabitat preferences and seed predation by small mammals in old fields. *Oikos* 82: 37-50.
- Martin TJ, Major RE. 2001. Changes in wolf spider (Araneae) assemblages across woodland-pasture boundaries in the central wheat-belt of New South Wales, Australia. *Austral Ecol.* 26: 264-74.
- Matlack GR. 1993. Microenvironment variation within and among forest edge sites in the eastern United States. *Biol. Conserv.* 66: 185-94.
- McKone MJ, McLauchlan KK, Lebrun EG, McCall AC. 2001. An edge effect caused by adult corn-rootworm beetles on sunflowers in tallgrass prairie remnants. *Conserv. Biol.* 15: 1315-24.
- Medley KE. 1997. Distribution of the non-native shrub *Lonicera maackii* in Kramer Woods, Ohio. *Phys. Geogr.* 18: 18-36.
- Meekins JF, McCarthy BC. 2001. Effect of environmental variation on the invasive success of a nonindigenous forest herb. *Ecol. Appl.* 11: 1336-48.
- Meiners SJ, Handel SN, Pickett STA. 2000. Tree seedling establishment under insect herbivory: edge effects and inter-annual variation. *Plant Ecol.* 151: 161-70.
- Meiners SJ, LoGiudice K. 2003. Temporal consistency in the spatial pattern of seed predation across a forest - old field edge. *Plant Ecol.* 168: 45-55.
- Menzel MA, Carter TC, Menzel JM, Ford WM, Chapman BR. 2002. Effects of group selection silviculture in bottomland hardwoods on the spatial activity patterns of bats. *For. Ecol. Manage.* 162: 209-18.
- Meyer CL, Sisk TD, Covington WW. 2001. Microclimatic changes induced by ecological restoration of

- ponderosa pine forests in northern Arizona. *Restor. Ecol.* 9: 443-52.
- Miller SG, Knight RL, Miller CK. 1998. Influence of recreational trails on breeding bird communities. *Ecol. Appl.* 8: 162-9.
- Mills LS. 1995. Edge effects and isolation: red-backed voles on forest remnants. *Conserv. Biol.* 9: 395-402.
- Moen J, Jonsson BG. 2003. Edge effects on liverworts and lichens in forest patches in a mosaic of boreal forest and wetland. *Conserv. Biol.* 17: 380-8.
- Mönkkönen M, Mutanen M. 2003. Occurrence of moths in boreal forest corridors. *Conserv. Biol.* 17: 468-75.
- Morgan JW. 1998. Patterns of invasion of an urban remnant of a species-rich grassland in southeastern Australia by non-native plant species. *J. Veg. Sci.* 9: 181-90.
- Morneau F, Doucet GJ, Giguère M, Laperle M. 1999. Breeding bird species richness associated with a powerline right-of-way in a northern mixed forest landscape. *Can. Field-Nat.* 113: 598-604.
- Morris DW. 1997. Optimally foraging deer mice in prairie mosaics: a test of habitat theory and absence of landscape effects. *Oikos* 80: 31-42.
- Moruzzi TL, Fuller TK, DeGraaf RM, Brooks RT, Li WJ. 2002. Assessing remotely triggered cameras for surveying carnivore distribution. *Wildl. Soc. Bull.* 30: 380-6.
- Nickel AM, Danielson BJ, Moloney KA. 2003. Wooded habitat edges as refugia from microtine herbivory in tallgrass prairies. *Oikos* 100: 525-33.
- Norris DR, Stutchbury BJM, Pitcher TE. 2000. The spatial response of male hooded warblers to edges in isolated fragments. *Condor* 102: 595-600.
- Palik BJ, Murphy PG. 1990. Disturbance versus edge effects in sugar-maple/beech forest fragments. *For. Ecol. Manage.* 32: 187-202.
- Pearman PB. 1997. Correlates of amphibian diversity in an altered landscape of Amazonian Ecuador. *Conserv. Biol.* 11: 1211-25.
- Peltonen M. 1999. Windthrows and dead-standing trees as bark beetle breeding material at forest-clearcut edge. *Scand. J. For. Res.* 14: 505-11.
- Peltonen M, Heliövaara K. 1998. Incidence of *Xylechinus pilosus* and *Cryphalus saltuarius* (Scolytidae) in forest-clearcut edges. *For. Ecol. Manage.* 103: 141-7.
- Piper SD, Catterall CP. 2003. A particular case and a general pattern: hyperaggressive behaviour by one species may mediate avifaunal decreases in fragmented Australian forests. *Oikos* 101: 602-14.
- Ranney JW, Bruner MC, Levenson JB. 1981. The importance of edge in the structure and dynamics of forest islands. In *Forest island dynamics in man-dominated landscapes*, ed. RL Burgess, DM Sharpe, pp. 67-96. New York, NY, USA: Springer-Verlag, Inc.
- Renhorn KE, Esseen PA, Palmqvist K, Sundberg B. 1997. Growth and vitality of epiphytic lichens .1. Responses to microclimate along a forest edge-interior gradient. *Oecologia* 109: 1-9.
- Restrepo C, Gomez N, Heredia S. 1999. Anthropogenic edges, treefall gaps, and fruit-frugivore interactions in a neotropical montane forest. *Ecology* 80: 668-85.

- Restrepo C, Vargas A. 1999. Seeds and seedlings of two neotropical montane understory shrubs respond differently to anthropogenic edges and treefall gaps. *Oecologia* 119: 419-26.
- Rheault H, Drapeau P, Bergeron Y, Esseen PA. 2003. Edge effects on epiphytic lichens in managed black spruce forests of eastern North America. *Can. J. For. Res.* 33: 23-32.
- Ries L, Fagan WF. 2003. Habitat edges as a potential ecological trap for an insect predator. *Ecol. Ent.* 28: 567-72.
- Roach WJ, Huntly N, Inouye R. 2001. Talus fragmentation mitigates the effects of pikas, *Ochotona princeps*, on high alpine meadows. *Oikos* 92: 315-24.
- Robitaille JF, Aubry K. 2000. Occurrence and activity of American martens *Martes americana* in relation to roads and other routes. *Acta Theriol.* 45: 137-43.
- Rodewald PG, Brittingham MC. 2002. Habitat use and behavior of mixed species landbird flocks during fall migration. *Wilson Bull.* 114: 87-98.
- Rose S, Fairweather PG. 1997. Changes in floristic composition of urban bushland invaded by *Pittosporum undulatum* in northern Sydney, Australia. *Aust. J. Bot.* 45: 123-49.
- Rosenberg KV, Raphael MG. 1986. Effects of forest fragmentation on vertebrates in douglas-fir forests. In *Wildlife 2000: Modeling habitat relationships of terrestrial vertebrates*, ed. J Verner, ML Morrison, CJ Ralph, pp. 263-72. Madison, WI, USA: University of Wisconsin Press
- Ross WG, Kulhavy DL, Conner RN. 1997. Stand conditions and tree characteristics affect quality of longleaf pine for red-cockaded woodpecker cavity trees. *For. Ecol. Manage.* 91: 145-54.
- Russell WH, Carnell K, McBride JR. 2001. Black bear (*Ursus americanus* Pallas) feeding damage across timber harvest edges in northern California coast redwood (*Sequoia sempervirens*[D. Don] Endl.) forests, USA. *Nat. Areas J.* 21: 324-9.
- Russell WH, Jones C. 2001. The effects of timber harvesting on the structure and composition of adjacent old-growth coast redwood forest, California, USA. *Landsc. Ecol.* 16: 731-41.
- Schlaepfer MA, Gavin TA. 2001. Edge effects on lizards and frogs in tropical forest fragments. *Conserv. Biol.* 15: 1079-90.
- Sisk TD, Haddad NM, Ehrlich PR. 1997. Bird assemblages in patchy woodlands: modeling the effects of edge and matrix habitats. *Ecol. Appl.* 7: 1170-80.
- Sizer N, Tanner EVJ. 1999. Responses of woody plant seedlings to edge formation in a lowland tropical rainforest, Amazonia. *Biol. Conserv.* 91: 135-42.
- Small MF, Hunter ML. 1989. Response of passerines to abrupt forest-river and forest-powerline edges in Maine. *Wilson Bull.* 101: 77-83.
- Smedshaug CA, Lund SE, Brekke A, Sonerud GA, Rafoss T. 2002. The importance of the farmland-forest edge for area use of breeding hooded crows as revealed by radio telemetry. *Ornis Fenn.* 79: 1-13.
- Sparks EJ, Belthoff JR, Ritchison G. 1994. Habitat use by eastern screech-owls in central Kentucky. *J. of Field Ornith.* 65: 83-95.

Stevens SM, Husband TP. 1998. The influence of edge on small mammals: evidence from Brazilian Atlantic forest fragments. *Biol. Conserv.* 85: 1-8.

Strelke WK, Dickson JG. 1980. Effect of forest clear-cut edge on breeding birds in east Texas. *J. Wildl. Manage.* 44: 559-67.

Strøm H, Sonerud GA. 2001. Home range and habitat selection in the pygmy owl *Glaucidium passerinum*. *Ornis Fenn.* 78: 145-58.

Stroud DA, Reed TM, Harding NJ. 1990. Do moorland breeding waders avoid plantation edges? *Bird Study* 37: 177-86.

Takada M, Asada M, Miyashita T. 2002. Cross-habitat foraging by sika deer influences plant community structure in a forest-grassland landscape. *Oecologia* 133: 389-94.

Toms JD, Lesperance ML. 2003. Piecewise regression: a tool for identifying ecological thresholds. *Ecology* 84: 2034-41.

Van Dongen S, Scott T. 2002. Effects of forest fragmentation and local habitat structure on densities of winter moth (*Operophtera brumata* L.). *Belg. J. Zool.* 132: 165-70.

Van Horn MA, Gentry RM, Faaborg J. 1995. Patterns of ovenbird (*Seiurus aurocapillus*) pairing success in Missouri forest tracts. *Auk* 112: 98-106.

Van Wilgenburg SL, Mazerolle DF, Hobson KA. 2001. Patterns of arthropod abundance, vegetation, and microclimate at boreal forest edge and interior in two landscapes: implications for forest birds. *Ecoscience* 8: 454-61.

Vernes K, Marsh H, Winter J. 1995. Home-range characteristics and movement patterns of the red-legged pademelon (*Thylogale stigmatica*) in a fragmented tropical rainforest. *Wildl. Res.* 22: 699-708.

Wahungu GM, Catterall CP, Olsen MF. 1999. Selective herbivory by red-necked pademelon *Thylogale thetis* at rainforest margins: factors affecting predation rates. *Aust. J. Ecol.* 24: 577-86.

Wahungu GM, Catterall CP, Olsen MF. 2001. Predator avoidance, feeding and habitat use in the red-necked pademelon, *Thylogale thetis*, at rainforest edges. *Aust. J. Zool.* 49: 45-58.

Walter DE, Azam GN, Waite G, Hargreaves J. 1998. Risk assessment of an exotic biocontrol agent: *Phytoseiulus persimilis* (Acari : Phytoseiidae) does not establish in rainforest in southeast Queensland. *Aust. J. Ecol.* 23: 587-92.

Watkins RZ, Chen J, Pickens J, Brosofske KD. 2003. Effects of forest roads on understory plants in a managed hardwood landscape. *Conserv. Biol.* 17: 411-9.

Weathers KC, Cadenasso ML, Pickett STA. 2001. Forest edges as nutrient and pollutant concentrators: potential synergisms between fragmentation, forest canopies, and the atmosphere. *Conserv. Biol.* 15: 1506-14.

Weathers KC, Lovett GM, Likens GE. 1995. Cloud deposition to a spruce forest edge. *Atmos. Environ.* 29: 665-72.

Wenny DG, Clawson RL, Faaborg J, Sheriff SL. 1993. Population density, habitat selection and minimum area requirements of three forest-interior warblers in central Missouri. *Condor* 95: 968-79.

Whitaker DM, Montevecchi WA. 1997. Breeding bird assemblages associated with riparian, interior forest, and nonriparian edge habitats in a balsam fir ecosystem. *Can. J. For. Res.* 27: 1159-67.

Wolf M, Batzli GO. 2002. Effects of forest edge on populations of white-footed mice *Peromyscus leucopus*. *Ecography* 25: 193-9.

Young A, Mitchell N. 1994. Microclimate and vegetation edge effects in a fragmented podocarp-broadleaf forest in New Zealand. *Biol. Conserv.* 67: 63-72.

Young TP, Patridge N, Macrae A. 1995. Long-term glades in acacia bushland and their edge effects in Laikipia, Kenya. *Ecol. Appl.* 5: 97-108.