

## Demographic responses by birds to fragmentation

### Demographic responses by birds to forest fragmentation

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Appendix. Data and their sources used in this study. Columns from left to right: species; scale of the study (landscape, edge or patch size), region (Palearctic or Nearctic), demographic variable measured, nest site (cavity; open nest in trees or scrub; open nest in ground) and migration status (resident or migrant) of the species studied, effect size of the study as Fisher's Z-transform (Zr), vote (- = fragmentation has negative effect, + = fragmentation has positive effect, 0 = no effect) and reference.

Species	Scale	Region	Demographic variable			Effect size (Zr)	Vote	Reference
			measured	Nest site	Migration status			
<i>Aegolius funereus</i>	Landscape	Palearctic	Clutch size	Cavity	Resident	-0,1492	-	Hakkarainen et al. 1996
<i>Aegolius funereus</i>	Landscape	Palearctic	Timing	Cavity	Resident	0,0133	0	Hakkarainen et al. 1996
<i>Aegolius funereus</i>	Landscape	Palearctic	Nest success	Cavity	Resident	0,6124	0	Hakkarainen et al. 1996
<i>Bombycilla cedrorum</i>	Landscape	Nearctic	Nest					
<i>Bombycilla cedrorum</i>	Landscape	Nearctic	predation	Tree/scrub	Resident		0	Tewksbury et al. 1998
<i>Bombycilla cedrorum</i>	Landscape	Nearctic	Nest paras.	Tree/scrub	Resident		0	Tewksbury et al. 1998
<i>Bombycilla cedrorum</i>	Landscape	Nearctic	Nest success	Tree/scrub	Resident		+	Tewksbury et al. 1998
<i>Cardinalis cardinalis</i>	Landscape	Nearctic	Nest					
<i>Cardinalis cardinalis</i>	Landscape	Nearctic	predation	Tree/scrub	Resident		0	Robinson et al. 1995
<i>Cardinalis cardinalis</i>	Landscape	Nearctic	Nest paras.	Tree/scrub	Resident		0	Robinson et al. 1995
<i>Catharus guttatus</i>	Edge	Nearctic	Clutch size	Ground	Migrant	1,2222	-	Manolis et al. 2002
<i>Catharus guttatus</i>	Edge	Nearctic	Nest success	Ground	Migrant	-0,2281	+	Flashpohler et al.2001
<i>Certhia familiaris</i>	Edge	Palearctic	Nest success	Cavity	Resident	-0,1206	0	Kuitunen & Helle 1988
<i>Certhia familiaris</i>	Edge	Palearctic	Clutch size	Cavity	Resident	0,0814	-	Kuitunen & Helle 1988
<i>Certhia familiaris</i>	Edge	Palearctic	Timing	Cavity	Resident	0,0601	-	Kuitunen & Helle 1988
<i>Dendroica castanea</i>	Landscape	Nearctic	Dispersal	Tree/scrub	Migrant		-	Belisle et al. 2001
<i>Dendroica petechia</i>	Landscape	Nearctic	Nest paras.	Tree/Scrub	Migrant	0,9245	0	Tewksbury et al. 1998
<i>Dendroica petechia</i>	Landscape	Nearctic	Nest					
<i>Dendroica petechia</i>	Landscape	Nearctic	predation	Tree/scrub	Migrant		0	Tewksbury et al. 1998
<i>Dendroica petechia</i>	Landscape	Nearctic	Nest success	Tree/scrub	Migrant		-	Tewksbury et al. 1998
<i>Dendroica virens</i>	Edge	Nearctic	Nest success	Tree/Scrub	Migrant	0,0281	-	Flashpohler et al.2001
<i>Dryocopus martius</i>	Landscape	Palearctic	Clutch size	Cavity	Resident	0,0032	0	Tjernberg et al. 1993
<i>Dryocopus martius</i>	Landscape	Palearctic	Nest success	Cavity	Resident	0,105	0	Tjernberg et al. 1993
<i>Dryocopus martius</i>	Landscape	Palearctic	Timing	Cavity	Resident		0	Tjernberg et al. 1993
<i>Dryocopus martius</i>	Landscape	Palearctic	Fledling					
<i>Dryocopus martius</i>	Landscape	Palearctic	condit.	Cavity	Resident		0	Tjernberg et al. 1993
<i>Emberiza citrinella</i>	Patch size	Palearctic	Clutch size	Ground	Resident	-0,1044	-	Moller 1991
<i>Emberiza citrinella</i>	Patch size	Palearctic	Nest					
<i>Emberiza citrinella</i>	Patch size	Palearctic	predation	Ground	Resident	-0,4384	-	Moller 1991

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<i>Emberiza citrinella</i>	Patch size	Paleartic	Nest success	Ground	Resident	-0,5065	0	Moller 1991
<i>Empidonax minimus</i>	Edge	Nearctic	Nest success	Tree/Scrub	Migrant	0,0151	-	Flashpohler et al.2001
<i>Empidonax virescens</i>	Landscape	Nearctic	Nest					
			predation	Tree/scrub	Migrant		0	Robinson et al. 1995
<i>Empidonax virescens</i>	Landscape	Nearctic	Nest paras.	Tree/scrub	Migrant		0	Robinson et al. 1995
<i>Ficedula hypoleuca</i>	Edge	Paleartic	Clutch size	Cavity	Migrant	-0,2093	0	Huhta et al. 1999
<i>Ficedula hypoleuca</i>	Edge	Paleartic	Timing	Cavity	Migrant	-0,8366	0	Huhta et al. 1999
<i>Ficedula hypoleuca</i>	Edge	Paleartic	Nest success	Cavity	Migrant	0,1412	0	Huhta et al. 1999
			Fledling					
<i>Ficedula hypoleuca</i>	Edge	Paleartic	condit.	Cavity	Migrant	-0,3459	0	Huhta et al. 1999
			Pairing					
<i>Ficedula hypoleuca</i>	Patch size	Paleartic	success	Cavity	Migrant		0	Huhta & Jokimäki 2001
<i>Ficedula hypoleuca</i>	Patch size	Paleartic	Clutch size	Cavity	Migrant		0	Huhta & Jokimäki 2001
<i>Ficedula hypoleuca</i>	Patch size	Paleartic	Timing	Cavity	Migrant		-	Huhta & Jokimäki 2001
			Nest					
<i>Ficedula hypoleuca</i>	Patch size	Paleartic	predation	Cavity	Migrant		0	Huhta & Jokimäki 2001
<i>Ficedula hypoleuca</i>	Patch size	Paleartic	Nest success	Cavity	Migrant		0	Huhta & Jokimäki 2001
<i>Fringilla coelebs</i>	Patch size	Paleartic	Clutch size	Tree/Scrub	Resident	-0,0424	-	Moller 1991
			Nest					
<i>Fringilla coelebs</i>	Patch size	Paleartic	predation	Tree/Scrub	Resident	-0,3887	-	Moller 1991
<i>Fringilla coelebs</i>	Patch size	Paleartic	Nest success	Tree/Scrub	Resident	-0,507	0	Moller 1991
			Nest					
<i>Helmitheros vermivorus</i>	Landscape	Nearctic	predation	Ground	Migrant		-	Robinson et al. 1995
<i>Helmitheros vermivorus</i>	Landscape	Nearctic	Nest paras.	Ground	Migrant		-	Robinson et al. 1995
			Nest					
<i>Hylocichla mustelina</i>	Patch size	Nearctic	predation	Tree/Scrub	Migrant	-0,4099	-	Hoover et al. 1995
<i>Hylocichla mustelina</i>	Patch size	Nearctic	Nest paras.	Tree/Scrub	Migrant	-0,1709	0	Hoover et al. 1995
<i>Hylocichla mustelina</i>	Patch size	Nearctic	Nest success	Tree/Scrub	Migrant	-0,4052	-	Hoover et al. 1995
<i>Hylocichla mustelina</i>	Patch size	Nearctic	Nest paras.	Tree/Scrub	Migrant	0,08	-	Friesen et al. 1999b
<i>Hylocichla mustelina</i>	Patch size	Nearctic	Nest success	Tree/Scrub	Migrant	0,0816	-	Friesen et al. 1999b
			Nest					
<i>Hylocichla mustelina</i>	Landscape	Nearctic	predation	Tree/Scrub	Migrant	-0,1036	0	Donovan et al. 1995
<i>Hylocichla mustelina</i>	Landscape	Nearctic	Nest paras.	Tree/Scrub	Migrant	-0,2507	0	Donovan et al. 1995
			Nest					
<i>Hylocichla mustelina</i>	Patch size	Nearctic	predation	Tree/scrub	Migrant		-	Weinberg & Roth 1998
			Nest					
<i>Hylocichla mustelina</i>	Patch size	Nearctic	predation	Tree/scrub	Migrant		-	Weinberg & Roth, -92 res.
<i>Hylocichla mustelina</i>	Patch size	Nearctic	Nest paras.	Tree/scrub	Migrant		-	Weinberg & Roth 1998
<i>Hylocichla mustelina</i>	Patch size	Nearctic	Nest paras.	Tree/scrub	Migrant		-	Weinberg & Roth, -92 res.
<i>Hylocichla mustelina</i>	Patch size	Nearctic	Nest success	Tree/scrub	Migrant		-	Weinberg & Roth 1998
<i>Hylocichla mustelina</i>	Patch size	Nearctic	Nest success	Tree/scrub	Migrant		-	Weinberg & Roth, -92 res.
<i>Hylocichla mustelina</i>	Patch size	Nearctic	Survival	Tree/scrub	Migrant		-	Weinberg & Roth 1998
<i>Hylocichla mustelina</i>	Landscape	Nearctic	Nest success	Tree/scrub	Migrant		-	Donovan et al. 1995
			Nest					
<i>Hylocichla mustelina</i>	Landscape	Nearctic	predation	Tree/scrub	Migrant		-	Robinson et al. 1995
<i>Hylocichla mustelina</i>	Landscape	Nearctic	Nest paras.	Tree/scrub	Migrant		-	Robinson et al. 1995
			Pairing					Sodhi & Paszkowski
<i>Mniotilta varia</i>	Patch size	Nearctic	success	Ground	Migrant	-0,7987	-	1997
			Nest					
<i>Oporornis formosus</i>	Landscape	Nearctic	predation	Ground	Migrant		0	Robinson et al. 1995

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<i>Oporornis formosus</i>	Landscape	Nearctic	Nest paras.	Ground	Migrant		0	Robinson et al. 1995
<i>Parus atricapillus</i>	Landscape	Nearctic	Dispersal	Cavity	Resident		-	Belisle et al. 2001
<i>Parus atricapillus</i>	Landscape	Nearctic	Dispersal	Cavity	Resident		-	St Clair et al. 1998
<i>Parus caeruleus</i>	Patch size	Paleartic	Nest success	Cavity	Resident		0	Hinsley et al. 1999
<i>Parus caeruleus</i>	Patch size	Paleartic	Timing	Cavity	Resident		-	Hinsley et al. 1999
<i>Parus caeruleus</i>	Patch size	Paleartic	Clutch size	Cavity	Resident		0	Hinsley et al. 1999
			Fledling					
<i>Parus caeruleus</i>	Patch size	Paleartic	condit.	Cavity	Resident		-	Hinsley et al. 1999
<i>Parus caeruleus</i>	Patch size	Paleartic	Nest success	Cavity	Resident		0	Nour et al.1998
<i>Parus caeruleus</i>	Patch size	Paleartic	Clutch size	Cavity	Resident		0	Nour et al.1998
			Fledling					
<i>Parus caeruleus</i>	Patch size	Paleartic	condit.	Cavity	Resident		0	Nour et al.1998
<i>Parus carolinensis</i>	Patch size	Nearctic	Survival	Cavity	Resident	-0,2641	0	Doherty & Grubb 2002
<i>Parus cristatus</i>	Patch size	Paleartic	Dispersal	Cavity	Resident	-1,7072	0	Lens & Dhondt 1994
<i>Parus major</i>	Patch size	Paleartic	Clutch size	Cavity	Resident	-0,106	0	Moller 1991
<i>Parus major</i>	Patch size	Paleartic	Nest success	Cavity	Resident	-0,4459	-	Moller 1991
<i>Parus major</i>	Patch size	Paleartic	Clutch size	Cavity	Resident		0	Hinsley et al. 1999
<i>Parus major</i>	Patch size	Paleartic	Timing	Cavity	Resident		-	Hinsley et al. 1999
<i>Parus major</i>	Patch size	Paleartic	Nest success	Cavity	Resident		0	Hinsley et al. 1999
			Fledling					
<i>Parus major</i>	Patch size	Paleartic	condit.	Cavity	Resident		0	Hinsley et al. 1999
<i>Parus major</i>	Patch size	Paleartic	Nest success	Cavity	Resident		0	Nour et al.1998
<i>Parus major</i>	Patch size	Paleartic	Clutch size	Cavity	Resident		0	Nour et al.1998
			Fledling					
<i>Parus major</i>	Patch size	Paleartic	condit.	Cavity	Resident		0	Nour et al.1998
			Nest					
<i>Passerina cyanea</i>	Landscape	Nearctic	predation	Tree/scrub	Migrant		-	Robinson et al. 1995
<i>Passerina cyanea</i>	Landscape	Nearctic	Nest paras.	Tree/scrub	Migrant		-	Robinson et al. 1995
<i>Pheucticus ludovicianus</i>	Patch size	Nearctic	Nest paras.	Tree/Scrub	Migrant	-0,1608	0	Friesen et al. 1999b
<i>Pheucticus ludovicianus</i>	Patch size	Nearctic	Nest success	Tree/Scrub	Migrant	-0,0656	0	Friesen et al. 1999b
<i>Pheucticus ludovicianus</i>	Edge	Nearctic	Nest success	Tree/Scrub	Migrant	-0,1606	0	Flashpohler et al.2001
			Pairing					
<i>phoenicurus phoenicurus</i>	Patch size	Paleartic	success	Cavity	Migrant		0	Huhta & Jokimäki 2001
<i>Phoenicurus phoenicurus</i>	Patch size	Paleartic	Clutch size	Cavity	Migrant		0	Huhta & Jokimäki 2001
<i>Phoenicurus phoenicurus</i>	Patch size	Paleartic	Timing	Cavity	Migrant		0	Huhta & Jokimäki 2001
			Nest					
<i>phoenicurus phoenicurus</i>	Patch size	Paleartic	predation	Cavity	Migrant		0	Huhta & Jokimäki 2001
<i>phoenicurus phoenicurus</i>	Patch size	Paleartic	Nest success	Cavity	Migrant		0	Huhta & Jokimäki 2001
<i>Pica pica</i>	Patch size	Paleartic	Clutch size	Tree/Scrub	Resident	-0,0563	-	Moller 1991
			Nest					
<i>Pica pica</i>	Patch size	Paleartic	predation	Tree/Scrub	Resident	-0,4881	-	Moller 1991
<i>Picoides borealis</i>	Landscape	Nearctic	Nest success	Cavity	Resident	-0,1424	0	Beyer et al. 1996
<i>Picoides pubescens</i>	Patch size	Nearctic	Survival	Cavity	Resident	-0,1618	-	Doherty & Grubb 2002
<i>Piranga olivacea</i>	Landscape	Nearctic	Nest	Tree/Scrub	Migrant	-0,5361	-	Robinson et al. 1995

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<i>Piranga olivacea</i>	Edge	Nearctic	predation Nest success Pairing	Tree/Scrub	Migrant	0,0898	0	Flashpohler et al.2001
<i>Piranga olivacea</i>	Patch size	Nearctic	success Pairing	Tree/scrub	Migrant		-	Roberts & Norment 1999
<i>Piranga olivacea</i>	Patch size	Nearctic	success	Tree/scrub	Migrant		0	-96 results
<i>Piranga olivacea</i>	Patch size	Nearctic	Nest success	Tree/scrub	Migrant		-	Roberts & Norment 1999
<i>Piranga olivacea</i>	Patch size	Nearctic	Nest success Pairing	Tree/scrub	Migrant		-	-96 results
<i>Seiurus aurocapillus</i>	Patch size	Nearctic	success Pairing	Ground	Migrant	-0,3799	-	Bayne & Hobson 2001
<i>Seiurus aurocapillus</i>	Patch size	Nearctic	success Pairing	Ground	Migrant	-1,1792	-	Burke & Nol 1998
<i>Seiurus aurocapillus</i>	Patch size	Nearctic	success Pairing	Ground	Migrant	-1,0089	-	Villard et al. 1993
<i>Seiurus aurocapillus</i>	Patch size	Nearctic	success	Ground	Migrant	-0,5671	0	Gibbs & Faaborg 1999
<i>Seiurus aurocapillus</i>	Landscape	Nearctic	Nest predation	Ground	Migrant	-0,1356	0	Donovan et al. 1995
<i>Seiurus aurocapillus</i>	Landscape	Nearctic	Nest paras. Pairing	Ground	Migrant	-0,1095	0	Donovan et al. 1995
<i>Seiurus aurocapillus</i>	Landscape	Nearctic	success Nest	Ground	Migrant	-0,0906	0	Porneluzi & Faaborg 1999
<i>Seiurus aurocapillus</i>	Landscape	Nearctic	predation	Ground	Migrant	0,0641	+	Porneluzi & Faaborg 1999
<i>Seiurus aurocapillus</i>	Landscape	Nearctic	Nest paras.	Ground	Migrant	-1,8067	0	Porneluzi & Faaborg 1999
<i>Seiurus aurocapillus</i>	Landscape	Nearctic	Clutch size	Ground	Migrant	-0,4137	-	Porneluzi & Faaborg 1999
<i>Seiurus aurocapillus</i>	Landscape	Nearctic	Survival Nest	Ground	Migrant	-0,0224	-	Porneluzi & Faaborg 1999
<i>Seiurus aurocapillus</i>	Edge	Nearctic	predation	Ground	Migrant	-0,2202	-	King et al. 1996
<i>Seiurus aurocapillus</i>	Edge	Nearctic	Nest success Fledling	Ground	Migrant	-0,1921	0	King et al. 1996
<i>Seiurus aurocapillus</i>	Edge	Nearctic	condit. Pairing	Ground	Migrant	0,2941	-	King et al. 1996
<i>Seiurus aurocapillus</i>	Patch size	Nearctic	success	Ground	Migrant	-1,4297	0	Van Horn et al 1995
<i>Seiurus aurocapillus</i>	Edge	Nearctic	Nest success	Ground	Migrant	-1,2242	-	Manolis et al. 2002
<i>Seiurus aurocapillus</i>	Edge	Nearctic	Clutch size	Ground	Migrant	0,362	-	Manolis et al. 2002
<i>Seiurus aurocapillus</i>	Edge	Nearctic	Clutch size	Ground	Migrant	0,4236	0	Flashpohler et al.2001
<i>Seiurus aurocapillus</i>	Edge	Nearctic	Nest success Pairing	Ground	Migrant	-0,2208	0	Flashpohler et al.2001
<i>Seiurus aurocapillus</i>	Patch size	Nearctic	success	Ground	Migrant		0	Sabine et al. 1996
<i>Seiurus aurocapillus</i>	Landscape	Nearctic	Nest success Nest	Ground	Migrant		-	Donovan et al. 1995
<i>Seiurus aurocapillus</i>	Landscape	Nearctic	predation	Ground	Migrant		0	Robinson et al. 1995
<i>Seiurus aurocapillus</i>	Landscape	Nearctic	Nest paras.	Ground	Migrant		-	Robinson et al. 1995
<i>Seiurus aurocapillus</i>	Landscape	Nearctic	Dispersal	Ground	Migrant		-	Belisle et al. 2001
<i>Sitta carolinensis</i>	Patch size	Nearctic	Survival	Cavity	Resident	-0,2604	0	Doherty & Grubb 2002
<i>Sitta carolinensis</i>	Patch size	Nearctic	Survival	Cavity	Resident	-0,0531	-	Doherty & Grubb 2002
<i>Sitta europaea</i>	Patch size	Paleartic	Clutch size	Cavity	Resident	0,2376	0	Matthysen & Adriansen

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								1998
								Matthysen & Adriansen
<i>Sitta europaea</i>	Patch size	Palearctic	Timing	Cavity	Resident	0,1174	0	1998
								Matthysen & Adriansen
<i>Sitta europaea</i>	Patch size	Palearctic	Nest success	Cavity	Resident	0,2282	0	1998
			Fledling					Matthysen & Adriansen
<i>Sitta europaea</i>	Patch size	Palearctic	condit.	Cavity	Resident	0,4794	0	1998
<i>Sitta europaea</i>	Patch size	Palearctic	Dispersal	Cavity	Resident	-0,4011	-	Matthysen & Currie 1996
<i>Sitta europaea</i>	Patch size	Palearctic	Survival	Cavity	Resident		0	Matthysen 1999
<i>Sitta europaea</i>	Patch size	Palearctic	Dispersal	Cavity	Resident		-	Matthysen 1999
<i>Tetrao tetrix</i>	Landscape	Palearctic	Nest success	Ground	Resident	-0,1366	0	Kurki & Linden 1995
<i>Tetrao tetrix</i>	Landscape	Palearctic	Nest success	Ground	Resident		-	Kurki et al. 2000
<i>Tetrao urogallus</i>	Landscape	Palearctic	Survival	Ground	Resident	-0,2093	0	Gjerde & Wegge 1989
<i>Tetrao urogallus</i>	Landscape	Palearctic	Nest success	Ground	Resident		-	Kurki et al. 2000
<i>Turdus merula</i>	Patch size	Palearctic	Clutch size	Tree/Scrub	Resident	0,0525	0	Moller 1991
			Nest					
<i>Turdus merula</i>	Patch size	Palearctic	predation	Tree/Scrub	Resident	-0,2448	-	Moller 1991
<i>Turdus merula</i>	Patch size	Palearctic	Nest success	Tree/Scrub	Resident	-0,2788	0	Moller 1991
<i>Turdus migratorius</i>	Edge	Nearctic	Nest success	Tree/Scrub	Migrant	0,0186	0	Flashpohler et al.2001
			Nest					
<i>Turdus migratorius</i>	Landscape	Nearctic	predation	Tree/scrub	Migrant		0	Tewksbury et al. 1998
<i>Turdus migratorius</i>	Landscape	Nearctic	Nest paras.	Tree/scrub	Migrant		0	Tewksbury et al. 1998
<i>Turdus migratorius</i>	Landscape	Nearctic	Nest success	Tree/scrub	Migrant		+	Tewksbury et al. 1998
<i>Vireo gilvus</i>	Landscape	Nearctic	Nest paras.	Tree/Scrub	Migrant	1,3405	0	Tewksbury et al. 1998
			Nest					
<i>Vireo gilvus</i>	Landscape	Nearctic	predation	Tree/scrub	Migrant		0	Tewksbury et al. 1998
<i>Vireo gilvus</i>	Landscape	Nearctic	Nest success	Tree/scrub	Migrant		-	Tewksbury et al. 1998
			Nest					
<i>Vireo olivaceus</i>	Landscape	Nearctic	predation	Tree/Scrub	Migrant	-0,1783	0	Donovan et al. 1995
<i>Vireo olivaceus</i>	Landscape	Nearctic	Nest paras.	Tree/Scrub	Migrant	-0,1811	0	Donovan et al. 1995
<i>Vireo olivaceus</i>	Edge	Nearctic	Nest success	Tree/Scrub	Migrant	0,0581	0	Flashpohler et al.2001
<i>Vireo olivaceus</i>	Landscape	Nearctic	Nest success	Tree/scrub	Migrant		-	Donovan et al. 1995
			Nest					
<i>Vireo olivaceus</i>	Landscape	Nearctic	predation	Tree/scrub	Migrant		0	Robinson et al. 1995
<i>Vireo olivaceus</i>	Landscape	Nearctic	Nest paras.	Tree/scrub	Migrant		-	Robinson et al. 1995