Online appendix for "Extra-pair paternity in birds: review of the genetic benefits"

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Lists of species in the database and effect sizes for the meta-analysis

Species	**Good genes?**	**References**
Acrocephalus arundinaceus	Yes	Hasselquist *et al.* 1996
Acrocephalus schoenobaenus	No	Buchanan and Catchpole 2000; Langefors *et al.* 1998; Marshall *et al.* 2007
Acrocephalus sechellensis	Yes	Richardson *et al.* 2005
Agelaius phoeniceus	No	Gray 1997; Weatherhead 1999; Weatherhead and Boag 1995; Westneat 2006
Anthus spinoletta	No	Reyer *et al.* 1997
Aphelocoma ultramarina	No	Li and Brown 2000
Carpodacus mexicanus	No	Hill *et al.* 1994
Cygnus atratus	No	Kraaijeveld *et al.* 2004
Dendroica caerulescens	No	Webster *et al.* 2001
Dendroica petechia	Yes	Yezerinac and Weatherhead 1997
Diomedea exulans	No	Jouventin *et al.* 2007
Dolichonyx oryzivorus	Yes	Bollinger and Gavin 1991
Emberiza citrinella	Yes	Sundberg and Dixon 1996
Emberiza schoeniclus	No	Bouwman *et al.* 2006, 2007; Kleven and Lifjeld 2004; Kleven *et al.* 2006c
Empidonax minimus	No	Tarof *et al.* 2005
Euplectes orix	Yes	Friedl and Klump 2005, 2002
Fidecula albicollis	Yes	Krist *et al.* 2005; Sheldon *et al.* 1997; Sheldon and Ellegren 1999
Fidecula hypoleuca	No	Ellegren *et al.* 1995; Lifjeld *et al.* 1997; Rätti *et al.* 1995, 2001
Geothlypis frichas	Yes	Garvin *et al.* 2006; Thusius *et al.* 2001
Gymnorhina tibicen	No	Durrant and Hughes 2006
Hirundo rustica	Yes	Kleven *et al.* 2006a,b; Møller and Cuervo 2003; Møller and Tegelström 1997; Møller *et al.* 1998; Neuman *et al.* 2007; Safran *et al.* 2005; Saino *et al.* 1997; Smith *et al.* 1991
Icterus galbula	Yes	Richardson and Burke 1999
Luscinia svecica	No	Johnsen *et al.* 2000, 1998, 2001; Krokene *et al.* 1996
Malurus cyaneus	Yes	Dunn and Cockburn 1999
Malurus melanocephalus	Yes	Karubian 2002

Table A1 continued below.

Species	**Good genes?**	**References**
Malurus splendes	No	Tarvin *et al.* 2005
Nectarinia osea	No	Zilberman *et al.* 1999
Oenanthe oenanthe	No	Currie *et al.* 1998
Panurus biarmicus	Yes	Hoi and Hoi-Leitner 1997
Parus ater	No	Dietrich *et al.* 2004; Schmoll *et al.* 2003, 2005a
Parus caeruleus	Yes	Charmantier *et al.* 2004; Delhey *et al.* 2003, 2007; Foerster *et al.* 2003; Johannessen *et al.* 2005; Kempenaers *et al.* 1992, 1997; Krokene *et al.* 1998; Poesel *et al.* 2006
Parus cristatus	Yes	Lens *et al.* 1997
Parus major	No	Johannessen *et al.* 2005; Krokene *et al.* 1998; Lubjuhn *et al.* 2001, 1999; Otter *et al.* 2001; Strohbach *et al.* 1998
Passer domesticus	No	Cordero *et al.* 1999; Veiga and Boto 2000; Wetton *et al.* 1995; Whitekiller *et al.* 2000
Passerculus sandwichensis	No	Freeman-Gallant 1996; Freeman-Gallant *et al.* 2006
Passerina cearulea	Yes	Estep *et al.* 2005
Passerina cyanea	Yes	Westneat 1990
Petronia petronia	No	Pilastro *et al.* 2002
Phalacrocorax aristotelis	No	Graves *et al.* 1993
Phylloscopus fuscatus	Yes	Forstmeier 2002; Forstmeier *et al.* 2002
Poecile atricapillus	Yes	Otter *et al.* 1994, 1998; Ramsay *et al.* 2000
Progne subis	Yes	Morton *et al.* 1990; Wagner *et al.* 1996
Riparia riparia	No	Augustin *et al.* 2007
Setophaga ruticilla	No	Perreault *et al.* 1997
Sialia sialis	Yes	Gowaty and Bridges 1991
Sturnus vulgaris	No	Smith and von Schantz 1993
Tachycineta bicolor	No	Barber *et al.* 2005, 1998; Dunn *et al.* 1994; Kempenaers *et al.* 1999, 2001; Lifjeld *et al.* 1993; OBrien and Dawson 2007; Whittingham and Dunn 2001; Whittingham *et al.* 2006
Taeniopygia guttata	Yes	Burley *et al.* 1996
Troglodytes aedon	No	Johnson *et al.* 2002; Poirier *et al.* 2004
Wilsonia citrina	No	Stutchbury *et al.* 1997
Zonotrichia leucophrys	No	Sherman and Morton 1988

Table A1: Species in the database for which the GGH was tested.

Species	**Comp. genes?**	**Test variable**	**References**
Acrocephalus arundinaceus	No	Relatedness	Hansson *et al.* 2004
Acrocephalus schoenobaenus	No	Relatedness	Langefors *et al.* 1998
Acrocephalus sechellensis	No	Relatedness	Richardson *et al.* 2005
Agelaius phoeniceus	No	Heterozygosity	Gray 1997
Aphelocoma ultramarina	Yes	Relatedness	Eimes *et al.* 2005
Actitis hypoleuca	Yes	Relatedness	Blomqvist *et al.* 2002
Calidris mauri	Yes	Relatedness	Blomqvist *et al.* 2002
Charadrius alexandrius	Yes	Relatedness	Blomqvist *et al.* 2002; Kupper *et al.* 2004
Cygnus atratus	No	Relatedness	Kraaijeveld *et al.* 2004
Dendroica caerulescens	No	Heterozygosity	Smith *et al.* 2005
Diomedea exulans	Yes	Relatedness	Jouventin *et al.* 2007
Emberiza schoeniclus	No	Relatedness, Immunocompetance, Heterozygosity	Bouwman *et al.* 2006; Kleven and Lifjeld 2004, 2005
Fidecula hypoleuca	Yes	Relatedness	Rätti *et al.* 1995
Gymnorhina tibicen	No	Relatedness	Durrant and Hughes 2005
Luscinia svecica	Yes	Immunocompetance	Johnsen *et al.* 2000
Malurus splendes	Yes	Relatedness	Tarvin *et al.* 2005
Parus ater	No	Relatedness	Schmoll *et al.* 2005b
Parus caeruleus	Mixed	Relatedness	Charmantier *et al.* 2004; Foerster *et al.* 2003, 2006; Kempenaers *et al.* 1996
Parus major	Mixed	Consistency in choice, Heterozygosity	Lubjuhn *et al.* 2001; Otter *et al.* 2001
Passerculus sandwichensis	Yes	MHC similarity	Freeman-Gallant *et al.* 2003, 2006
Philomachus pugnax	Yes	Relatedness	Thuman and Griffith 2005
Riparia riparia	No	Relatedness	Augustin *et al.* 2007
Setophaga ruticilla	No	Distribution	Perreault *et al.* 1997
Tachycineta bicolor	Mixed	Identity of sires, Relatedness, Hatching failure	Barber *et al.* 2005; Kempenaers *et al.* 1999; Whittingham and Dunn 2001; Whittingham *et al.* 2006
Troglodytes aedon	Yes	Relatedness	Masters *et al.* 2003

Table A2: Species in the database for which the CGH was tested.

Species	**Trait**	**Statistical test**	**n**	**Fisher's z**	**Reference**
Acrocephalus arundinaceus	Tarsus length	Binomial test	10	-0.4912	Hasselquist *et al.* 1996
Acrocephalus schoenobaenus	Wing length, mass	Wilcoxon matc. Pair	9	-0.6756	Marshall *et al.* 2007
Agelaius phoeniceus	Body size	Paired t	78	0.0888	Westneat 2006
Cygnus atrata	Size	Paired t	10	0.2851	Kraaijeveld *et al.* 2004
Dendroica caerulescens	Tarsus length, wing chord, mass	Paired t	22	-0.2368	Webster *et al.* 2001
Dendroica petechia	Size	Wilcoxon matc. Pair	20	0.3030	Yezerinac and Weatherhead 1997
Emberiza citrinella	Tarsus length	Paired t	11	0.1731	Sundberg and Dixon 1996
Emberiza schoeniclus	Tarsus length, wing length	Paired t	48	0.2946	Bouwman *et al.* 2007
Euplectes orix	Tarsus length, wing length, mass	Wilcoxon matc. Pair	19	0.4681	Friedl and Klump 2002
Fidecula albicollis	Body size (Principle comp.)	Paired t	10	-0.1494	Sheldon and Ellegren 1999
Geothlypis frichas	Body mass	Paired t	28	0.1076	Garvin *et al.* 2006
Luscinia svecica	Wing length and condition	Paired t	49	0.1954	Johnsen *et al.* 2001
Malurus splendes	Tarsus length, wing length, mass	Paired t	99	0.0863	Tarvin *et al.* 2005
Nectarinia osea	Wing length	Paired t	4	-1.7687	Zilberman et al 2001
Parus caeruleus	Tarsus length, wing length, mass	Paired t	61	0.0344	Charmantier *et al.* 2004
Parus caeruleus	Tarsus length	Paired t	73	0.3086	Foerster *et al.* 2003[1]
Parus caeruleus	Tarsus length	Paired t	31	-0.2369	Foerster *et al.* 2003[2]
Parus caeruleus	Tarsus length, wing length	Paired t	35	0.4225	Kempenaers *et al.* 1997
Parus major	Tarsus length, wing length	Paired t	15	0.1464	Strohbach *et al.* 1998
Phylloscopus fuscatus	Body size (PC), wing length, body mass	Paired t	14	-0.2964	Forstmeier *et al.* 2002
Tachycineta bicolor	Tarsus length, wing length, mass	Paired t	9	1.0462	Kempenaers *et al.* 2001
Tachycineta bicolor	Tarsus length, wing length, mass	Paired t	12	0.4775	Kempenaers *et al.* 1999
Tachycineta bicolor	Wing size	Paired t	5	0.6070	Lifjeld *et al.* 1993

Table A3: Effect sizes for size comparisons between EP and WP males. [1]: for local EP males, [2]: for non-local EP males

Species	**Trait**	**Statistical test**	**n**	**Fisher's z**	**Reference**
Acrocephalus arundinaceus	Repertoire size	Binomial test	10	2.2317	Hasselquist *et al.* 1996
Acrocephalus schoenobaenus	Repertoire size	Wilcoxon matc. Pair	10	-1.2701	Marshall *et al.* 2007
Agelaius phoeniceus	Eupalet size, extent of non-black	Paired t	73.5	0.0198	Westneat 2006
Cygnus atrata	Ornament	Paired t	10	0.2851	Kraaijeveld *et al.* 2004
Dendroica caerulescens	Wing spot size	Paired t	18	0.2413	Webster *et al.* 2001
Dendroica petechia	Breast streaking	Wilcoxon matc. Pair	26	0.1777	Yezerinac and Weatherhead 1997
Emberiza citrinella	Color	Paired t	11	0.8446	Sundberg and Dixon 1996
Emberiza schoeniclus	Badge size, color, various song properties, CP	Paired t	21.4	0.2012	Bouwman *et al.* 2007
Fidecula albicollis	Forehead patch width, area; wing patch	Paired t	12	0.8657	Sheldon and Ellegren 1999
Geothlypis trichas	Mask size, bib size and color	Paired t	30	0.3157	Garvin *et al.* 2006
Geothlypis frichas	Facial mask, song rate	Paired t	14.5	0.5332	Thusius *et al.* 2001
Luscinia svecica	Chesnut band width, throat chroma	Paired t	21.5	0.1928	Johnsen *et al.* 2001
Malurus splendes	% blue on abdomen, tail length, cloacal protuberance	Paired t	99	0.0691	Tarvin *et al.* 2005
Parus caeruleus	UV hue, UV chroma	Paired t	48	-0.1417	Delhey *et al.* 2007
Parus caeruleus	Average strophe length, pause length	Paired t	6	1.1208	Kempenaers *et al.* 1997
Parus major	Breast stripe width	Paired t	14	-0.2498	Strohbach *et al.* 1998
Phylloscopus fuscatus	Residual song performance, repertoire size, res. syllable rate	Paired t	11	0.6111	Forstmeier *et al.* 2002
Phylloscopus fuscatus	Tail length	Paired t	14	0.2899	Forstmeier *et al.* 2002
Setophaga ruticilla	Bib size	Binomial test	7	0.2869	Perreault *et al.* 1997
Tachycineta bicolor	CP, tail length	Paired t	10	0.6680	Kempenaers *et al.* 1999

Table A4: Effect sizes for secondary sexual trait comparisons between EP and WP males.

Species	Trait	Statistical test	n	Fisher's z	Reference
Acrocephalus schoenobaenus	Territory size	Wilcoxon matc. Pair	9	-1.4219	Marshall *et al.* 2007
Agelaius phoeniceus	Longevity	Paired sign test	57	0.3231	Weatherhead and Boag 1995
Cygnus atrata	Condition	Paired t	10	0.2851	Kraaijeveld *et al.* 2004
Emberiza schoeniclus	Mass (residual)	Paired t	48	0.0700	Bouwman *et al.* 2007
Euplectes orix	Number of nests, nest building rate	Wilcoxon matc. Pair	16	-0.1627	Friedl and Klump 2002
Euplectes orix	Number of nests (high quality males)	Wilcoxon matc. Pair	5	1.5791	Friedl and Klump 2005
Euplectes orix	Number of nests (low quality males)	Wilcoxon matc. Pair	14	-0.3177	Friedl and Klump 2005
Geothlypis frichas	Body condition	Paired t	16	0.2102	Thusius *et al.* 2001
Malurus cyaneus	Molting date	Paired t	44	0.5112	Dunn and Cockburn 1999
Malurus splendes	Body condition	Paired t	99	0.0197	Tarvin *et al.* 2005
Parus ater	Recapture probability	McNamer test	42	-0.0324	Dietrich *et al.* 2004
Parus caeruleus	Over winter survival, condition	Chi^2	61	0.0885	Charmantier *et al.* 2004
Phylloscopus fuscatus	Body condition	Paired t	14	0.0444	Forstmeier *et al.* 2002
Poecile atricapillus	Dominance	Binomial test	15	0.4254	Otter *et al.* 1998
Tachycineta bicolor	Number of mite holes, condition	Wilcoxon matc. Pair	9	0.7761	Kempenaers *et al.* 2001
Tachycineta bicolor	Number of mite holes	Wilcoxon matc. Pair	12	-0.0109	Kempenaers *et al.* 1999
Troglodytes aedon	Body condition, probability of return	Paired t	20	0.0651	Poirier *et al.* 2004

Table A5: Effect sizes for condition comparisons between EP and WP males.

Species	Trait	Statistical test	n	Fisher's z	Reference
Acrocephalus arundinaceus	Age	Binomial test	10	0.5565	Hasselquist *et al.* 1996
Agelaius phoeniceus	Age	Paired t	57	0.4290	Weatherhead and Boag 1995
Dendroica caerulescens	Age	Paired sign test	25	0.0040	Webster *et al.* 2001
Dendroica petechia	Age	Chi^2 (df=2)	28	0.4860	Yezerinac and Weatherhead 1997
Emberiza schoeniclus	Age	Wilcoxon matc. Pair	17	0.5651	Bouwman *et al.* 2007
Fidecula albicollis	Age	Wilcoxon matc. Pair	12	0.1248	Sheldon and Ellegren 1999
Geothlypis frichas	Experience	Chi^2	24	0.6477	Thusius *et al.* 2001
Luscinia svecica	Age	Fisher's exact test	59	0.2740	Johnsen *et al.* 2001
Parus caeruleus	Age	Paired t	61	0.0413	Charmantier *et al.* 2004
Parus caeruleus	Age	Wilcoxon matc. Pair	79	0.3424	Foerster *et al.* 2003
Parus caeruleus	Age	Wilcoxon matc. Pair	36	-0.0067	Foerster *et al.* 2003
Parus caeruleus	Age	Wilcoxon matc. Pair	49	0.5304	Delhey *et al.* 2007
Phylloscopus fuscatus	Age	Wilcoxon matc. Pair	14	0.0000	Forstmeier *et al.* 2002
Setophaga ruticilla	Age	Binomial test	9	1.4210	Perreault *et al.* 1997
Troglodytes aedon	Experience	Fisher's exact test	20	0.0000	Poirier *et al.* 2004

Table A6: Effect sizes for age comparisons between EP and WP males.

Species	**Trait**	**Statistical test**	**n**	**Fisher's z**	**Reference**
Acrocephalus arundinaceus	Band sharing	Paired t	29	0.0981	Richardson *et al.* 2005
Acrocephalus arundinaceus	Relatedness to females	Paired t	18	-0.2426	Hansson *et al.* 2004
Acrocephalus schoenobaenus	Band sharing	Sign test	11	0.0000	Langefors *et al.* 1998
Cygnus atrata	Relatedness to females	Pairwise t	28	0.1506	Kraaijeveld *et al.* 2004
Dendroica caerulescens	Compatibility	ANOVA	92	-0.1082	Smith *et al.* 2005
Emberiza schoeniclus	Relatedness to females	Paired t	20	0.1008	Kleven and Lifjeld 2005
Emberiza schoeniclus	Relatedness to females	Paired t	47	-0.1527	Bouwman *et al.* 2006
Malurus splendes	Relatedness to females	Paired t	107	0.1273	Tarvin *et al.* 2005
Parus ater	Band sharing	Paired t	63	-0.0888	Schmoll *et al.* 2005b
Parus caeruleus	Band sharing	Paired t	18	0.1234	Kempenaers *et al.* 1996
Parus caeruleus	Relatedness to females	Paired t	96	0.0636	Foerster *et al.* 2003
Parus caeruleus	Relatedness to females	Paired t	61	0.0490	Charmantier *et al.* 2004
Passerculus sandwichensis	Genetic similarity	Paired sign test	15	0.5604	Freeman-Gallant *et al.* 2006
Troglodytes aedon	Relatedness to females	Paired t	20	0.3312	Masters *et al.* 2003

Table A7: Effect sizes for comparisons between EP and WP males for their relatedness to the female.

Species	Trait	Statistical test	n	Fisher's z	Reference
Acrocephalus arundinaceus	Relatedness	Correlation	245	-0.09907	Hansson *et al.* 2004
Acrocephalus sechellensis	MHC band sharing	Logistic Regr.	82	0.06907	Richardson *et al.* 2005
Aphelocoma ultramarina	Band sharing	Chi Square	31	0.67920	Eimes *et al.* 2005
Calidris mauri, Actitis hypolueca, Charadrius alexandrinus	Band sharing	Chi Square	105	0.23234	Blomqvist *et al.* 2002
Cygnus atratus	Pair-wise relatedness	t test	65	-0.08431	Kraaijeveld *et al.* 2004
Dendroica caerulescens	Compatibility	Logistic Regr.	92	0.17005	Smith *et al.* 2005
Phoebastria irrorata	Pair relatedness	Logistic Regr.	74	0.22489	Jouventin *et al.* 2007
Emberiza schoeniclus	Pair-wise relatedness	t test	61	0.05465	Bouwman *et al.* 2006
Emberiza schoeniclus	Relatedness to female	Binom. log. Reg	53	0.15417	Kleven and Lifjeld 2005
Fideluca hypoleuca	Band sharing	Logistic Regr.	44	-0.72847	Rätti *et al.* 1995
Gymnorhina tibicen tyrannica	Relatedness	Correlation	21	0.03802	Durrant and Hughes 2005
Malurus splendes	Pair-wise relatedness	One-Way Anova	114	0.24610	Tarvin *et al.* 2005
Parus ater	Band sharing	Correlation	202	-0.07011	Schmoll *et al.* 2005b[3]
Parus ater	Band sharing	Correlation	44	-0.01000	Schmoll *et al.* 2005b[4]
Parus caeruleus	Relatedness to female	t test	177	-0.01436	Charmantier *et al.* 2004
Parus caeruleus	Relatedness to pair male	GLM	202	-0.01343	Foerster *et al.* 2006
Parus caeruleus	Band sharing	t test	103	0.09142	Kempenaers *et al.* 1996
Parus major	Heterozygosity	t test	17	0.64395	Otter *et al.* 2001
Passerculus sandwichensis	MHC similarity	Logistic Regr.	41	0.54116	Freeman-Gallant *et al.* 2003
Passerculus sandwichensis	Genetic similarity	Logistic Regr.	144	0.15990	Freeman-Gallant *et al.* 2006
Philomachus pugnax	Genetic similarity	Paired t	13	0.84329	Thuman and Griffith 2005
Riparia riparia	Band sharing	Mann Whitney U	41	0.18971	Augustin *et al.* 2007
Tachycineta bicolor	Band sharing	Logistic Regr.	72	-0.22745	Barber *et al.* 2005

Table A8: Effect sizes for the correlation of EPP with the genetic similarity of a pair.

Species	Trait	Statistical test	n	Fisher's z	Reference
Cygnus atratus	Survival to 8 months	Wilcoxon matched pair	23	-0.0687	Kraaijeveld *et al.* 2004
Parus ater	Prob. of local recruitment	GLMM	287	-0.0780	Schmoll *et al.* 2005a
Parus caeruleus	Survival to Fledgling	GLMM	101	0.1442	Charmantier *et al.* 2004
Parus caeruleus	Recruitment	GLIM	17	0.0729	Kempenaers *et al.* 1997
Parus caeruleus	Recapture	Simulation	15	0.1362	Krokene *et al.* 1998
Parus major	Recapture	Simulation	11	0.3233	Krokene *et al.* 1998
Parus major	Recapture	Fisher's exact test	67	0.0000	Lubjuhn *et al.* 1999
Parus major	Recruitment	Fisher's exact test	41	0.0000	Strohbach *et al.* 1998
Tachycineta bicolor	Survival btw 8 days to fledge	Common odds ratio	7	0.0000	Kempenaers *et al.* 1999
Tachycineta bicolor	Survival to Fledgling	Fisher's exact test	43	0.0687	Whittingham and Dunn 2001
Troglodytes aedon	Recruitment	Fisher's exact test	29	0.0000	Poirier *et al.* 2004

Table A9: Effect sizes for differences in survival between EPY and WPY.

Database for the Good Genes Hypothesis.

Reference	Species name	GGH suported?	How is quality inferred?	% Broods with EPP	% of EPY among all genotyped.	Correlation of WPP with male trait	Correlation of EPP with male trait	Difference between EP and WP males?	Difference between EPY and WPY?
Hasselquist et al. 1996	*Acrocephalus arundinaceus*	Yes	Song repertoire size averaged over life time correlated with residual post-fledgling survival of offspring. EP males had larger repertoire sizes than WP males	6	3	NA	NA	Yes	Yes
Langefors et al. 1998	*Acrocephalus schoenobaenus*	Yes	At the settlement time of the females having EPP there were fewer singing males. EPP's were by males who were not singing at the time of the female's settlement.	23	7.5(1.8-11.8)	NA	NA	Yes	NA
Buchanan and Catchpole 2000	*Acrocephalus schoenobaenus*	No	No correlate of losing paternity was found among male traits including arrival date, pairing date, repertoire size, song-flighting, male age, territory size.	34.4	8.4	No	NA	NA	NA
Marshall et al 2007	*Acrocephalus schoenobaenus*	No	EP males had smaller repertoires and territories than WP males (difference significant)	19	8.4	NA	NA	No	NA
Richardson et al. 2005	*Acrocephalus sechellensis*	Yes	Males with lower MHC diversity are more likely to lose paternity. EPY does not differ from WPY in MHC diversity	35 (calculated from fig. 3)	No data given	Yes	NA	Yes	No
Westneat 2006	*Agelaius phoeniceus*	No	Experimental manipulations of plumage traits (eupalet size, color and body pulmage color) did not change paternity los or gain.	No data reported	No data reported	No	No	No	NA
Weatherhead and Boag 1995	*Agelaius phoeniceus*	Yes	Larger males had more WP and EP breeding success. EP males were older and lived longer than WP males. No effect on plumage characteristics on any variable of reproductive success, and no effect of age and longevity to WP success.	no data reported	25.6	Yes	NA	Yes	NA
Gray 1997a	*Agelaius phoeniceus*	No	No consistency of males' status of being preferred as extra-pair mates between years.	55	35	NA	NA	NA	NA
Weatherhead 1999	*Agelaius phoeniceus*	No	In cases where the female and both her WP and EP mates bred two consecutive years, there was no consistent pattern of EPY. Also, selection of EP males was not correlated with harem size, fledged offspring or sired offspring.	no data reported	no data reported	NA	No	NA	NA
Reyer et al 1997	*Anthus spinoletta*	No	No difference in age, experience and survival between individuals at nest with and without EPY. No difference in terms of size and body condition between these categories.	12.4	5.2	No	NA	NA	NA
Li and Brown 2000	*Aphelocoma ultramarina*	No	Males with their own nests had more offspring than males without their own nests. Only two EP males had successful broods, 50% didn't nest at all.	63	40	NA	No	NA	NA
Hill et al. 1994	*Carpodacus mexicanus*	No	No difference in plumage or age between males losing paternity vs. not, even though plumage highly influences social mate choice.	14.3	8.3	No	NA	NA	NA
Kraaijeveld et al 2004	*Cygnus atratus*	No	EPY did not weigh more than WPY. Survival probabiliy of EPY not higher than WPY. EP males were not more ornamented, in better condition or larger than WP males.	37.6	15.1	NA	NA	No	No
Webster et al. 2001	*Dendroica caerulescens*	No	The following variables did not differ between EP males and WP males: Age, tarsus length, wing chord, mass and wing spot size. EPY was not randomly distributed over the nests	34.2	23	NA	NA	No	NA
Yezerinac and Weatherhead1997	*Dendroica petechia*	Yes	WPP was positively correlated with size, but WP and EP males were not different in size, age and plumage (breast streaks). Probability of a male achieving EP fertilization increased with increasing breast streaking. Males siring EPY as likely to lose paternity as males not siring	53.8	33.1	Yes	Yes	No	NA
Jouventin et al 2007	*Diomedea exulans*	No	Males that lost paternity did not differ in age, previous breeding experience or success from males that didn't. See also CGH	10.7	10.7	No	NA	NA	No
Bollinger and Gavin 1991	*Dolichonyx oryzivorus*	Yes	Young males paired to old females more likely to lose paternity, but frequency of EPP sired by unpaired, monogamous, or polygynous males is not different from the proportion of these categories in the population, primary females of polygynous males had the most EPY, secondary females the least.	38 (allozyme study, estimate)	14.6	Yes	No	NA	NA

Reference	Species name	GGH suported?	How is quality inferred?	% Broods with EPP	% of EPY among all genotyped.	Correlation of WPP with male trait	Correlation of EPP with male trait	Difference between EP and WP males?	Difference between EPY and WPY?
Sundberg and Dixon 1996	*Emberiza citrinella*	Yes	EP males had more colorful plumage than WP males but were not larger.	69	37	NA	NA	Yes	NA
Bouwman et al 2007	*Emberiza schoeniclus*	No	No significant correlation between male traits (such as badge rank or age) and WPP. Badge color correlated with EP success. EP males had longer wings and were older than WP males but nonsignificantly so after correcting for multiple tests. EPY had longer tarsi but not more likely to survive to fledgling than WPY	No data reported	51 (46-55)	No	Yes	No	No
Bouwman et al 2006	*Emberiza schoeniclus*	No	No difference in EPY levels between clutches of males that gained EPP vs. males that didn't. Proportion of EPP not consistent among the two broods of the same females. EP males were not less related to the female.	74	51	No	NA	NA	NA
Kleven and Lifjeld 2004	*Emberiza schoeniclus*	No	The immunocompetance of EPY tended to be lower (non-significant) than WPY. EP males' own WPY had higher immunocompetance than the EPY they sired.	No data reported	No data reported	NA	NA	NA	No
Kleven et al 2006c	*Emberiza schoeniclus*	Yes	Older males were more likely to sire EPY among the cases where the sire was identified. But no differences in terms of prob. of losing paternity between old and young males. Also, old males make more forays outside their territory.	64	36	No	Yes	NA	NA
Tarof et al. 2005	*Empidonax minimus*	No	Male morphology or body condition was not positively related to paternity in nest. Pairing date was positively correlated with proportion of EPP in nest.	62	39	No	NA	NA	NA
Friedl and Klump 2005	*Euplectes orix*	Yes	EP males siring offspring in low quality males' (number of nest sites in the territories used as indicator) territories were neighboring males of higher quality, but number of nest in their territories was not above population average. (Low quality is defined as having less than average number of nests)	33.3-70 % for high-quality males, 66.7% for low quality males (brood data not given)	18 (calculated from column 1 in p. 63)	NA	No	Yes	NA
Friedl and Klump 2002	*Euplectes orix*	Yes	EP males had larger tarsi than WP males and were more likely to be residents the year before. But no relation of morphology, number of nests in the territory (a measure of quality), or having sired EPP in other nests to probabiliy of EPP within the male's territory	30.5	17.6	No	NA	Yes	NA
Krist et al 2005	*Fidecula albicollis*	No	No effect of male plumage characteristics was reported on the proportion of EPY in their clutches. Eggs containing EPY were not bigger than eggs with WPY. EPY were more likely in the eggs preceding the penultimate egg	51.9	24.2 (experimental study)	No	NA	NA	NA
Sheldon and Ellegren 1999	*Fidecula albicollis*	Yes	Males with larger forehead and wing patches were less likely to lose paternity. EP males had greater forehead patch width than WP males, EP male's mates laid earlier than WP male's mate.	26	15.5	Yes	NA	Yes	NA
Sheldon et al. 1997	*Fidecula albicollis*	Yes	Males with larger forehead patches lost more paternity. The difference in condition between EPY and WPY was negatively correlated to the WP male's forehead patch size and positively correlated to the difference in forehead patch btw. EP and WP male.	not reported	not reported	Yes	NA	NA	Yes
Lifjeld et al. 1997	*Fidecula hypoleuca*	No	Males losing paternity had blacker than males not losing, even though blacker plumage is preferred in social mate choice (data significant from one year, and when both years pooled). There was low incidence of EPP.	16	5.6 (combined from two years)	No	NA	NA	NA
Ellegren et al 1995	*Fidecula hypoleuca*	No	Males that were experimentally handicapped between pairing and the fertile period of the female did not lose paternity significantly more often than control males.	17	7	No	NA	NA	NA
Ratti et al 2001	*Fidecula hypoleuca*	No	All 3 cases of broods containing EPP involved older females (>1 yrs of age) paired with yearling males (and browner plumage), but trend is not statistically significant.	7	4.4	No	NA	NA	NA
Ratti et al 1995	*Fidecula hypoleuca*	No	Blacker or browner males were not more likely to lose paternity	22	11	No	NA	NA	NA
Thusius et al. 2001	*Geothlypis trichas*	Yes	Males with larger masks were more likely to sire EP offspring and sired more EPY. EP males had larger masks than WP males. Breeding experience had a stonger effect these than mask size, and mask size was correlated with age and experience. Mask size did not correlate with WPP and with total reproductive success	22.2-60.7	12.3-25.0	No	Yes	Yes	NA

Reference	Species name	GGH suported?	How is quality inferred?	% Broods with EPP	% of EPY among all genotyped.	Correlation of WPP with male trait	Correlation of EPP with male trait	Difference between EP and WP males?	Difference between EPY and WPY?
Garvin et al. 2006	*Geothlypis trichas*	Yes	EPY had higher immunocompetance than WPY and their paternal half-siblings. Effect was only present in one year (in the other year WPY had ns. higher immune response). EPY had higher growth rate. EP males had larger masks than WP males, but mask size did not correlate with immune response. Bib size, color and body size was not different between EP and WP males.	44	20	NA	NA	Yes	Yes
Durrant and Hughes 2006	*Gymorhina tibicen*	No	No correlation between WPP and morphological traits or heterozygosity. Number of total fledglings form territory correlated with % WPP in one year of study. No correlation between % WPP and EPY sired	no data reported	44 (from Durrant&Hughes 2005)	No	No	NA	NA
Moller et al. 2003	*Hirundo rustica*	Yes	Arrival date and body condition (residuals from the regression of body mass to tarsus length) was positively correlated WPP. Tail length and age were not significantly correlated with WPP.	32.4	17.8	Yes	NA	NA	NA
Moller and Tegelstrom 1997	*Hirundo rustica*	Yes	Males who lost paternity had shorter tails than males who did not.	33.3	28	Yes	NA	NA	NA
Moller et al 1998	*Hirundo rustica*	Yes	Males with shorter tails and males singing less were more likely to lose paternity	58	37	Yes	NA	NA	NA
Saino et al. 1997	*Hirundo rustica*	Yes	Tail length was correlated with WPP in unmanipulated males. Males with experimentally shortened tails were less likely to acquire mates, and lost more paternity. The opposite was true for males with elongated tails.	no data reported	34	Yes	NA	NA	NA
Safran et al 2005	*Hirundo rustica erythrogaster*	Yes	Experimentally enhancing ventral plumage increased WPP for males when induced to lay a replacement clutch.	No data reported	No data reported	Yes	NA	NA	NA
Neuman, Safran& Lovette 2007	*Hirundo rustica erythrogaster*	No	Tail streamer length or age was not correlated with WPP, laying date or clutch size.	49	11	No	NA	NA	NA
Kleven et al 2006a	*Hirundo rustica erythrogaster*	Yes	Males with longer tail streamer were more successful at gaining EPP, but not more successful at not losing paternity in their own nest. Tail streamer length was also correlated with total fertilization success	50	31	No	Yes	NA	NA
Kleven et al 2006b	*Hirundo rustica erythrogaster*	No	No difference was found in the cell-mediated immune response between EPY and WPY from the same brood.	49.4 (calculated from p. 3)	No data reported	NA	NA	NA	No
Smith et al 1991	*Hirundo rustica erythrogaster*	Yes	Males with experimentally elongated tails actually lost more paternity, but paternity was positively correlated with original tail length.	45 (among the experimental males)	22 (from table 1)	Yes	NA	NA	NA
Richardson and Burke1999	*Icterus galbula bullockii*	Yes	Adult males (non-yearling) were less likely to lose paternity and more likely to gain EPP. The nearest adult male nest was significantly nearer for males that lost paternity than not. Male total reproductive success was found to be related only with the male age.	46	32	Yes	Yes	NA	NA
Krokene et al. 1996	*Luscinia s. svecica*	No	Song activity did not differ between males who lost paternity and males who did not.	35	20	No	NA	NA	NA
Johnsen et al. 1998	*Luscinia svecica*	Yes	Males with experimentally blackened throat ornaments lost more paternity in their broods.	58 (36-76)	30 (23-36)	Yes	NA	NA	NA
Johnsen et al. 2000	*Luscinia svecica*	No	EPY young had higher immunocompetance than WPY in the same nest, but not higher than WPY of the EP male's nest. Growth rate of nestlings was higher in the mixed paternity nests than in the nests of the EP male (see also genetic compatibility).	59	29	NA	NA	NA	No
Johnsen et al 2001	*Luscinia svecica*	Yes	Males with higher shortwave chroma had higher paternity in their own nests, and among the males siring EPP, proportion of EPP was correlated with chroma. Older males were more likely to sire EPY and EP males were older than WP males. No effect of plumage was found on probability of having an EPP and no difference was reported between WP and EP males in any plumage or body characteristics.	54	29	Yes	No	No	NA
Dunn and Cockburn 1999	*Malurus cyaneus*	Yes	Males that molted earlier into their breeding plumage were more successful at gaining EPF. Dominant males in cooperative groups had lower paternity in their clutches (relative to pair males), but were more likely to sire offspring in other clutches. Older males more likely to sire EPY. EP males molted earlier than WP males.	No data reported (almost all)	62	NA	Yes	Yes	NA
Karubian 2002	*Malurus melanocephalus*	Yes	2nd year bright males were less likely to lose paternity than dull or yearling bright males. No difference was found between yearling bright and dull males in amount of paternity lost. Sample included very few yearling bright males.	74.5	56	Yes	NA	NA	NA

Reference	Species name	GGH suported?	How is quality inferred?	% Broods with EPP	% of EPY among all genotyped.	Correlation of WPP with male trait	Correlation of EPP with male trait	Difference between EP and WP males?	Difference between EPY and WPY?
Tarvin et al. 2005	*Malurus splendes*	No	No correlation of measured male characteristics with WPP was found. EP males were not significantly different than WP males in morphology or amount of blue on the abdomen. Amount of blue on the abdomen was associated with higher number of EPY, but correlation was non-significant.	55.4 (from Webster et al 2004)	42.2 (from Webster et al. 2004)	No	Yes	No	NA
Zilberman et al. 1999	*Nectarinia osea osea*	No	No morphological difference was found between EP and WP males (7 EP males identified), other than wing length: EP males had shorter wings. No data is reported on epaulet size or age	36	23	NA	NA	No	NA
Currie et al 1998	*Oenanthe oenanthe*	No	No difference is reported in morphology, age, singing, and mate guarding behavior between males with EPY in their nests and males without.	29	11	No	NA	NA	NA
Hoi and Hoi-Leitner 1997	*Panurus biarmicus*	Yes	All EPY were in colonial nests. Long bearded males were less likely to lose paternity. Females in colonies were larger in size than solitarily nesting females. Precopulatory chases seem to select the fastest males.	29.5	14.4	Yes	NA	NA	NA
Dietrich et al 2004	*Parus ater*	No	Individuals (both Males and females) with EPP in their nests did not differ in their recapture probability from individuals without EPP.	70.8 (66.3 - 91.3)	31.4 (27.0 - 49.4)	No	NA	No	NA
Schmoll et al 2005a	*Parus ater*	No	Local recruitment probability was not different between EPY and WPY in the first broods, but EPY in second broods had higher local recruitment probability Similar patterns are reported for the number of grandchildren born from EPY vs WPY.	67.2 (57.1-65.8 in 1st broods, 86.4 in 2nd) (calculated from fig 1 in Schmoll et al 2005b)	30.5 (27.0-28.3 in 1st nests, 66,3 in 2nd) (from Schmoll et al. 2005b)	NA	NA	NA	No
Schmoll et al 2003	*Parus ater*	No	No significant difference is reported in recruitment probability and first year reproductive success between EPY and WPY.	65.9 in first broods, 87.3 in second broods	27.1 in first, 46.5 in second	NA	NA	NA	No
Otter et al. 1994	*Poecile atricapillus*	Yes	Only three nests containing EPY were found. All 3 EP males were dominant to the WP male.	37.5	17	NA	NA	Yes	NA
Otter et al. 1998	*Poecile atricapillus*	Yes	EP males were usually higher in dominance hierarchy in winter flocks than WP males, but high ranking males were not less likely to lose paternity than low ranking males	29.3	8.9	No	NA	Yes	NA
Ramsay et al. 2000	*Poecile atricapillus*	Yes	Females were more likely to have EPY in years before divorces, but did not tend to pair with former EP males	27(calculated from p. 21)	No data	Yes	NA	NA	NA
Delhey et al 2007	*Parus caeruleus*	No	Adult males that sire EPP were less UV ornamented in two of three years. Males that lost paternity had less UV ornamentation in one of three years. EP males tended to be older than WP males, but have less UV ornamentation (significant only for adult EP males). Males with experimentally increased UV ornamentation tended to sire more EP offspring than males experimentally decreased, contrary to the experiments.	59	15	No	No	Yes	NA
Poesel et al 2006	*Parus caeruleus*	Yes	Males that gained EPP started dawn song earlier, however males that didn't lost paternity did not start earlier. No relation of morphology and other song measures with EPP or WPP success. Older males sang earlier, but onset of dawn song was not different between males that survived and males that didn't.	No data reported	No data reported	No	Yes	NA	NA
Kempenaers et al. 1992	*Parus caeruleus*	Yes	Territories where EPY was found received significantly less territorial intrusions by females. Territories that received more intrusions recruited more offspring. Rate of female intrusions into a territory was inversely related to rate out of the territory. Males that did not lose paternity were more likely to survive to next year than males that did, and had larger tarsi.	31	11	Yes	NA	NA	NA
Kempenaers etal. 1997	*Parus caeruleus*	Yes	Males that lost paternity were less likely to survive to next year and had shorter strophe length. No difference was detected in the probability of survival to next year between EPY and WPY. EP males had longer tarsi and sang longer strophes during dawn chorus.	31-47	11--14	Yes	NA	Yes	No
Krokene et al. 1998	*Parus caeruleus*	No	Individuals showed no consistency between years in terms of having EPY in their broods. No significant difference was detected in survival or growth between EPY and WPY. No significant difference is reported in morphology or survival between males losing paternity and males not losing.	36	7	No	NA	NA	No

Reference	Species name	GGH suported?	How is quality inferred?	% Broods with EPP	% of EPY among all genotyped.	Correlation of WPP with male trait	Correlation of EPP with male trait	Difference between EP and WP males?	Difference between EPY and WPY?
Charmantier et al. 2004	*Parus caeruleus*	No	No significant differences were found between EP and WP males, including no significant difference in realized local recruitment success after EPY paternity is assigned.	53.6 on mainland 68 on island evergreen and 50 on island deciduous	16.1/25.4/18.2	NA	NA	No	NA
Delhey et al 2003	*Parus caeruleus*	No	Males with longer wavelength crown color were more likely to lose paternity in their own nests, but also more likely to gain in other nests	65	15	Yes	No	NA	NA
Foerster et al.2003	*Parus caeruleus*	Yes	EP males that were close neighbors were older, larger and sang longer strophes than WP males. EPY were more heterozygous than WPY, due to EPY sired by non-local males (see also compatible genes).	41(calculated from fig 1 and Methods)	16 (calculated from the Methods part)	NA	NA	Yes	Yes
Johannessen et al. 2005	*Parus caeruleus* and *P. major*	No	Crossfostered blue and great Tit males did not differ in the probability of losing paternity or percentage of EPP in their broods. Crossfostered great tits,but not blue tits, had a much lower conspecific pairing success.	BT: 29 in control, 46 in crossfostered GT: 31 in control, 17 in crossfostered	BT: 7 in control 16 in crossfostered GT: 9 in control 15 in crossfostered	NA	NA	NA	NA
Lens et al 1997	*Parus cristatus*	Yes	Males in poorer condition were more likely to refuse copulation solicitations from their mates, and more likely to lose paternity. EPP was higher if neighboring male was better condition.	30	11 (from table 1)	Yes	NA	NA	NA
Lubjuhn et al. 1999	*Parus major*	No	No difference in recapture rates was reported between males with and without EPY in their nests. There was no significant difference in the local recruitment probability of EPY vs WPY. Divorce was not more probable for females having EPY. Males that had EPY were not more likely to have EPY next season than males that did not have EPY.	27.8-44.2	5.4-8.6	No	NA	NA	No
Krokene et al. 1998	*Parus major*	No	No difference is reported in survival between EPY and WPY. No significant difference in morphology or survival was found between males who lost paternity and males who did not.	27	8	No	NA	NA	No
Lubjuhn et al. 2001	*Parus major*	No	No consistent pattern of EPP was detected within the two consecutive broods of the same pair.	24 in first broods, 60 in second (data from pairs with two broods only)	3.9 in first broods, 24.4 in second	NA	NA	NA	NA
Otter et al. 2001	*Parus major*	No	In playback experiments, males that "lost" against a simulated intrusion did not lose more paternity than males that "won".	39.1	9.9	No	NA	NA	NA
Strohbach et al. 1998	*Parus major*	No	No effect of tarsus length, wing length or breat stripe size was found on paternity. EP males were not significantly bigger, did not have bigger breast stripes, and did not survive better than WP males. EPY did not have significantly higher survival than WPY.	31	8.5	No	NA	No	No
Wetton et al 1995	*Passer domesticus*	Yes	Older males were significantly more likely to gain, but not less likely to lose, paternity	no data reported	no data reported	No	Yes	NA	NA
Veiga and Boto 2000	*Passer domesticus*	No	No significant difference was found in morphological measurements and age between males with and without EPY in their nest (sample size for EPY nests was small:5)	9.3	7	No	NA	NA	NA
Cordero et al. 1999	*Passer domesticus*	No	Probability of having EPP did not correlate with badge size.	12 - 28	4 - 10	No	NA	NA	NA
Whitekiller et al. 2000	*Passer domesticus*	No	Percent EPP in the nest was not correlated with male badge size. No difference in badge size is reported between males that survived to next year vs not.	36.5 (25 - 47)	20 (12 - 23.8)	No	NA	NA	NA
Freeman-Gallant et al 2006	*Passerculus sandwichensis*	No	No difference between males losing paternity and not in size, mass, age, genetic diversity and heterozygosity. No difference between EP and WP males in those traits. EP males tended to be less similar to the females than WP males. EPY young tended to be in better condition (see CGH)	66.7	No data reported	No	NA	No	Yes
Freeman-Gallant 1996	*Passerculus sandwichensis*	Yes	Amount of paternal care was a good predictor of the change in the paternity of social mate. More paternal care meant higher paternity in the second clutch. Paternal care also predicted survival to next year.	52.4 in first, 33.3 in second broods	30 in first 16.3 in second broods	Yes	NA	NA	NA
Estep et al. 2005	*Passerina cearulea*	Yes	Breast color was duller for males that had EPY in their nests than males that didn't. Males with more neighbors with brighter breast color mate-guarded more.	70	53	Yes	NA	NA	NA
Westneat 1990	*Passerina cyanea*	No	No difference in wing length and weight was detected between males that lost paternity and males that didn't.	48	35	No	NA	NA	NA

Reference	Species name	GGH suported?	How is quality inferred?	% Broods with EPP	% of EPY among all genotyped.	Correlation of WPP with male trait	Correlation of EPP with male trait	Difference between EP and WP males?	Difference between EPY and WPY?
Pilastro et al 2002	*Petronia petronia*	No	Polygynous males lost significantly more paternity in their nests. Badge size was not correlated with paternity loss in nest; age was correlated with paternity loss among monogamous males.	57.1	32	No	NA	NA	NA
Graves et al 1993	*Phalacrocorax aristotelis*	No	Females were more likely to accept EPC's in the EP male's nest when the EP male was successful, but parentage was not assigned for EPY. Males were not consistently preferred when compared across different nest sites. Nest sites had consistent productivity over years.	12.6	9.3	NA	NA	NA	NA
Forstmeier et al. 2002	*Phylloscopus fuscatus*	Yes	EP males had higher song performance than WP males. Males that did not lose paternity had song performances above the population average.	59	45	Yes	NA	Yes	NA
Forstmeier 2002	*Phylloscopus fuscatus*	No	No differences is reported between EP and WP males in morphology and age; most variation in reproductive success was due to attracting additional mates. Unmated males (mostly yearlings) gained similar paternity as monogamous males	59	45	NA	NA	No	NA
Wagner et al 1996	*Progne subis*	Yes	Most females engaging in EPCs were mated to yearling males. Older males gained most of the paternity. EPCs were correlated with the wing size difference of the male and the female in pairs with yearling males.	47 in yearling males, 8 in old	43 in yearling males, 4 in old	Yes	Yes	Yes	NA
Morton et al. 1990	*Progne subis*	Yes	EPC's seem to be forced. Above second year males rarely lost paternity, but second year males on average sired only a third of offspring of their partner. Egg dumping is also common, a third of eggs in second year female's clutches are from other females.	no data reported	no data reported	Yes	NA	NA	NA
Augustin et al 2007	*Riparia riparia*	No	No relation of male age and WPP. Pairs with EPP not more similar genetically than pairs without EPP. EPY not in better condition than WPY.	37	20.2	No	NA	NA	No
Perrault et al. 1997	*Setophaga ruticilla*	No	Subadult and younger adult males lose more paternity than older males. Older males more likely to sire EPP, but prior residency had greater effect on EPP sired than age. Males who had successful nests (not predated upon) were less likely to sire EPP. No significant morphological differences are reported between EP and WP males.	59	40	Yes	No	No	NA
Gowaty and Bridges 1991	*Sialia sialis*	Yes	Younger males were more likely to lose paternity than older males.			Yes	NA	NA	NA
Smith and von Schantz 1994	*Sturnus vulgaris*	No	No relation between hackle-feather length, wing or tarsus length and WPP is reported.	31.8	8.7	No	NA	NA	NA
O'Brien and Dawson 2007	*Tachycineta bicolor*	Yes	EPY tended to grow faster in mass and 9th primary feather than WPY but the effect is only seen in nests where EPP hatch earlier and when parasite loads are low. EPY not more likely to survive to fledgling, no difference in T-cell mediated immunocompetance.	85	35	NA	NA	NA	Yes
Dunn at al 1994	*Tachycineta bicolor*	No	No difference was found in morphology, condition, timing of laying and settling of the partner between males that lost paternity and males that did not. EP males were not less likely to lose paternity in their own nests. Only about 20% of EP sires were local residents, the remaining unsampled males.	87	53	No	NA	No	NA
Whittingham et al 2006	*Tachycineta bicolor*	No	When second broods were induced experimentally, proportion of EPP was consistent between the two broods. Identity of EP males was different between the two broods.	88 (both broods pooled)	49	NA	NA	NA	NA
Barber et al 1998	*Tachycineta bicolor*	No	Females that had their mates removed before they became fertile did not show increased tendency for having EPY, even though the replacement males were shorter in wing chord, and younger than their original mates	64 in control, 63 in the experimental treatment	33 in the control, 17 in experimental	No	NA	NA	NA
Kempenaers et al.1999	*Tachycineta bicolor*	No	No difference is reported between EP males and WP males in tarsus, wing, tail length, number of mite holes, body mass. EP males were equally likely to lose paternity in their own nests. EPY were not significantly different than WPY in body mass and size.	73.5	51.1	No	NA	No	No
Lifjeld et al 1993	*Tachycineta bicolor*	No	EP males tended to have longer wings, but difference was not significant.	50	38	NA	NA	No	NA
Whittingham and Dunn 2001	*Tachycineta bicolor*	No	EPY within a nest were not more likely to survive than WPY. EPY were not more likely to be male.	90.7 (calculated using the number of nests reported)	48.8	NA	NA	NA	No
Kempenaers et al 2001	*Tachycineta bicolor*	Yes	EP males were heavier than WP males and tended to have fewer mite holes.	76	52	NA	NA	Yes	NA

Reference	Species name	GGH suported?	How is quality inferred?	% Broods with EPP	% of EPY among all genotyped.	Correlation of WPP with male trait	Correlation of EPP with male trait	Difference between EP and WP males?	Difference between EPY and WPY?
Burley at al. 1996	*Taeniopygia guttata*	Yes	Males with red leg bands (attractive for females) were less likely to lose paternity, more likely to gain paternity, and engage in unforced copulations.	37.3	28	Yes	Yes	NA	NA
Johnson et al. 2002	*Troglodytes aedon*	No	No relation was found between male age and percent of EPP in his nest.	26 in early nesting pairs, 74 in late nesting	no data reported	No	NA	NA	NA
Poirier et al. 2004	*Troglodytes aedon*	No	EP males were not significantly different than WP males in body condition, prior breeding experience and probability of returning next year as breeders. Recruitment of EPY was not different than WPY.	28	10	NA	NA	No	No
Stutchbury et al 1997	*Wilsonia citrina*	No	There was a strong skew in EP fertilization success. Males who sired EPY were not significantly larger or older than males that did not sire EPY. Males showed no consistency between two consecutive years in their WPP.	35.3 (21-46)	26.7 (21-33)	No	No	NA	NA
Sherman and Morton 1988	*Zonotrichia leucophrys oriantha*	No	Males that lost paternity were more likely to be older than males that did not.	26	14	No	NA	NA	NA

Database for the Compatible Genes Hypothesis.

Reference	Latin name	Compatible genes effect?	How is com. genes inferred?	% Broods with EPP	% of EPY among all genotyped.
Hansson et al. 2004	*Acrocephalus arundinaceus*	No	No significant difference was found between WP and EP males in relatedness to the female.	6.6	not reported
Langefors et al. 1998	*Acrocephalus schoenobaenus*	No	Band sharing between the paired male and female did not predict EPP in their nest.	23	7.5 (1.8-11.8)
Richardson et al. 2005	*Acrocephalus sechellensis*	No	Band sharing with the female was not different between EP male and WP male.	35 (calculated from fig. 3)	No data given
Gray 1997a	*Agelaius phoeniceus*	No	Patterns of distribution of EPY between broods was not random.	55	35
Eimes et al 2005	*Aphelocoma ultramarina*	Yes	Pairs with EPY had significantly higher band-sharing than non-related individuals and higher than pairs without EPY.	39	16
Blomqvist et al. 2002	*Calidris mauri, Actitis hypolueca, Charadrius alexandrinus*	Yes	EPP in each seperate species is very low, but when data from the three are pooled, there is a significant tendency for genetically similar pairs to have EPY.	8.0,6.7,1.5	6.6,1.8,0.6
Kupper et al 2004	*Charadrius alexandrinus*	Yes	EPY tended to be more common later in the season, and there was a tendency for the similarity of mates to increase toward the end of season in two of the three sites. No direct correlation was found between pair genetic similarity and occurance of EPP.	7.9	1.3
Kraaijeveld et al 2004	*Cygnus atratus*	No	No significant difference was found between relatedness of pairs that had EPY in their nest and pairs that did not. EP males were not less related to females than WP males.	37.6	15.1
Smith et al. 2005	*Dendroica caerulescens*	No	No difference was found in heterozygosity between EP males and WP males and between EPY and WPY. Probability of having a EPP increased with increasing heterozygosity of the WP male.	58	39.6
Jouventin et al 2007	*Diomedea exulans*	Yes	Pair relatedness tended to correlate positively with probability of having EPP. EPY were not more heterozygous than WPY (but power of statistic is low).	10.7	10.7 (single egg clutches)
Bouwman et al 2006	*Emberiza schoeniclus*	No	Relatedness to the male partner could not predict whether a female will have EPP in her nest. EP males were not less related to the female than WP males.	74	51
Kleven and Lifjeld 2005	*Emberiza schoeniclus*	No	Pair forming was not influenced by heterozygosity or relatedness between the male and the female. Relatedness to the female did not predict WPP for males. Heterozygosity of the male did not predict the number of EPY he sired. EP and WP males did not differ significantly in relatedness to the female or heterozygosity. EPY were not significantly more heterozygous than WPY; heterozygosity did not correlate with measures of fitness.	54	30
Kleven and Lifjeld 2004	*Emberiza schoeniclus*	No	The immunocompetance of EPY tended to be lower (non-significant) than WPY. EP males' own WPY had higher immunocompetance than the EPY they sired.	No data reported	No data reported
Ratti et al 1995	*Fidecula hypoleuca*	Yes	More dissimilar pairs had more EPY in their nest. Avoidance of extreme outbreeding? Number fledged maximum at intermediate genetic similarity.	22	11
Durrant and Hughes 2005	*Gymnorhina tibicen tyrannica*	No	No relation was found between relatedness within a group between males and females and rate of EPY (extra-group young). (Western magpies which disperse less and have a much higher EPP rate (88%). This indicates inbreeding avoidance might be possible in that population.)	no data reported	44
Johnsen et al. 2000	*Luscinia svecica*	Yes	EPY young had higher immunocompetance than WPY in the same nest, but not higher than WPY of the EP male's nest. Growth rate of nestlings was higher in the mixed paternity nests than in the nests of the EP male.	59	29
Tarvin et al. 2005	*Malurus splendes*	Yes	Females whose clutches consisted entirely of EPY were genetically more similar to the WP male than to the EP male. In clutches with mixedpaternity, WPY young were less heterozygous and more inbred than EPY.	55.4 (from Webster et al 2004)	42.2 (from Webster et al. 2004)
Schmoll et al 2005b	*Parus ater*	No	No relation was found between the occurance of EPP with genetic similarity. EP males were genetically not less similar to the female than WP males. Genetic similarity within the pair did not predict reproductive success.	67.2 (57.1-65.8 in 1st broods, 86.4 in 2nd) (calculated from fig 1)	30.5 (27.0-28.3 in 1st nests, 66,3 in 2nd)
Charmantier et al. 2004	*Parus caeruleus*	No	No difference was found in relatedness to the female between WP and EP males	53.6 on mainland 68 on island evergreen and 50 on island deciduous	16.1/25.4/18.2
Foerster et al. 2006	*Parus caeruleus*	No	Probability of having EPY was did not depend on relatedness w/ WP male. The result was the same for prob. of having EPY with non-neighboring males. More related pairs did not have more distant EP males. Proportion of EPY in a nest correlated positively with difference in relatedness to female btw. WP and EP male.	No data reported	No data reported

Reference	Latin name	Compatible genes effect?	How is com. genes inferred?	% Broods with EPP	% of EPY among all genotyped.
Foerster et al.2003	*Parus caeruleus*	Yes	EP males that were not close neighbors sire EPY that were more heterozygous than WPY from the same nest. Higher heterozygosity predicted higher recruitment probability.	41(calculated from fig 1 and "Methods")	16 (calculated from "Methods")
Kempenaers et al. 1996	*Parus caeruleus*	No	Genetic similarity did have a negative effect on hatching success, but band sharing was not significantly different within pairs with EPP and without. Females were genetically not less related to EP males than to WP males.	no data reported	no data reported
Lubjuhn et al. 2001	*Parus major*	No	No consistent pattern of EPP was detected within the two consecutive broods of the same pair.	24 in first broods, 60 in second (data from pairs with two broods only)	3.9 in first broods, 24.4 in second
Otter et al 2001	*Parus major*	Yes	Males that lost paternity in their nest had significantly lower heterozygosity than males that did not lose paternity.	39.1	9.9
Freeman-Gallant et al. 2003	*Passerculus sandwichensis*	Yes	MHC similarity within a pair predicted the occurance of EPY in the first brood. Yearling females preferred pairing with males that were more dissimilar to them.	65.1	47.9
Freeman-Gallant et al. 2006	*Passerculus sandwichensis*	Yes	Pairs with EPY were more related to each other than pairs without. EP males more likely to be more distantly realted to female than WP males. EPY were in better condition than WPY in one year.	66.7	No data reported
Thuman and Griffith 2005	*Philomachus pugnax*	Yes	In multiple paternity broods where one male sired the majority of offspring (3 vs 1), the male was significantly less similar to the female than the other male.	52	no data reported
Augustin et al 2007	*Riparia riparia*	No	Pairs with EPY were genetically not more similar than pairs without EPY. EPY not in better condition than WPY.	37	20.2
Perrault et al. 1997	*Setophaga ruticilla*	No	More singly sired broods than expected from the increased diversity hypothesis were found.	59	40
Whittingham et al 2006	*Tachycineta bicolor*	Yes	When second broods were induced experimentally, proportion of EPP was consistent between the two broods. Identity of EP males was different between the two broods, consistent with increased diversity hypothesis.	88 (both broods pooled)	49
Whittingham and Dunn 2001	*Tachycineta bicolor*	No	Hatching failure was not related to occurrence of EPY in the nest	90.7 (9 % were all EPY) (calculated using the number of nests reported)	48.8
Kempenaers et al.1999	*Tachycineta bicolor*	Yes	Nests with EPY had higher hatching success, all examined unhatched eggs were fertilized, indicating embryonic mortality possibly from genetic incompatibility.	73.5 (18.4 all EPY)	51.1
Barber et al. 2005	*Tachycineta bicolor*	No	Genetic similarity within the pair did not explain the variance in the proportion of EPY in the broods and was not related to hatching success.	64	46
Masters et al. 2003	*Troglodytes aedon*	Yes	EP males did not differ significantly in their relatedness to the female from WP males, but they did have significantly more rare alleles.	ca. 40	ca. 17

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