The following supplement accompanies the article

A decade of seascape genetics: contributions to basic and applied marine connectivity

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Supplementary Methods

Building a database of seascape genetic papers

To generate a database of seascape genetic papers, we conducted Web of Science searches in January 2016 using the search terms (seascape genetic*), (seascape genom*), (marine landscape population genetic*), and (SNP marine selection OR SNP marine adaptation) with the dates restricted from 2006 to 2015. We excluded papers that were: (1) clearly irrelevant to the topic; (2) review papers; (3) purely descriptive and lacked statistical analyses; and/or (4) did not use empirical genetic data. Next, we carefully read the papers and only retained those that directly tested for the influence of seascape features on gene flow, genetic structure, genetic diversity and/or connectivity. Finally, we supplemented the database with additional seascape genetic papers that were not indexed by Web of Science using our search terms, but were gathered by broad reading of the literature by the co-authors of this review. These papers were subject to the same filtering criteria listed above.

We acknowledge that the search terms used may have missed many studies of diadromous species. We retained all diadromous studies found, as we believe that seascape genetics can learn from these studies, which bridge the landscape-seascape divide. Overall, this process led to the inclusion of 100 seascape genetic papers in the database. We used all 100 papers to assess trends in marker usage (Fig. 3—main text) as well as the taxonomic and geographic breadth of studies (Fig. 4—main text).

Exploring seascape predictors

To explore common drivers of genetic structuring, we investigated a subset of our 100 papers that statistically analyzed the relationship between multiple seascape predictors and a genetic response metric. Here, we excluded papers that (1) only considered one predictor variable, or (2) only used simple Mantel tests, correlations, or simple linear regressions. This led to 53 studies whose trends are discussed in detail in the main text. These studies are identified in the reference list below with an asterisk.

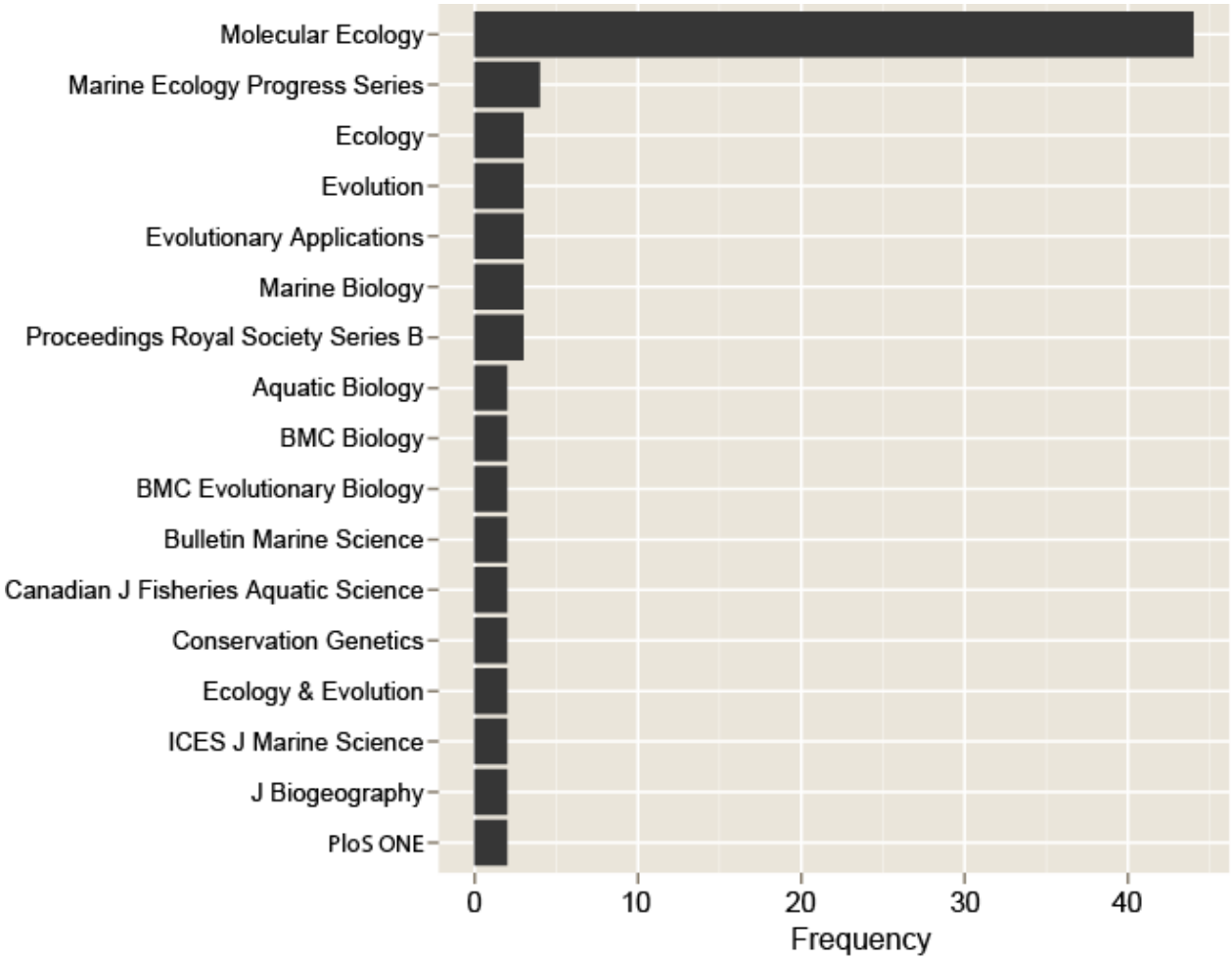

Fig S1. Seventeen journals that have published at least two seascape genetic papers during 2006-2015. Considering all journals that published at least one study, papers have appeared in 34 unique journals.

Table S1. Seascape genetic studies (n = 100) coded by: the journal they appear in, the focal taxonomic group, the marker used, ecosystem type, global position, and ocean/major sea. Data are also available as an Excel spreadsheet. Ang. is Angiospermae; Diadr. is diadromous; Estuar. is estuarine; GOM is Gulf of Mexico. Note that 'Microsatellite' refers to putatively neutral microsatellites; gene-associated microsatellites were classified as 'Other'.

Year	First Author	Journal	Taxon	Marker	Ecosystem	Global Position	Oceans
2015	Berg	Genome Biol Evol	Chordata	SNPs	Subtidal	Temperate	North Sea/Baltic Sea
2015	Bradbury	Mol Ecol	Chordata	Multiple	Diadr. or Estuar.	Temperate	N. Atlantic Estuaries
2015	Chaves-Fonnegra	Mol Ecol	Porifera	Microsatellites	Subtidal	Tropical	Caribbean
2015	Cossu	Hydrobiologia	Mollusca	Multiple	Intertidal + subtidal	Temperate	Mediterranean
2015	Daloia	PNAS	Chordata	Microsatellites	Subtidal	Tropical	Caribbean
2015	Davies	Mol Ecol	Cnidaria	Microsatellites	Subtidal	Tropical	North Pacific
2015	Deli	Acta Zool Bulgar	Arthropoda	Other	Intertidal	Temperate	Mediterranean
2015	Giles	Ecol Evol	Porifera	Microsatellites	Subtidal	Tropical	Red Sea
2015	Gonçalves da Silva	Mol Ecol	Chordata	SNPs	Subtidal	Temperate	South Pacific
2015	Gorospe	PloS ONE	Cnidaria	Microsatellites	Subtidal	Tropical	North Pacific
2015	Guo	BMC Biology	Chordata	SNPs	Diadr. or Estuar.	Temperate	North Sea/Baltic Sea
2015	Hecht	Mol Ecol	Chordata	SNPs	Diadr. or Estuar.	Temperate	N. Pacific Estuaries
2015	Jahnke	Mol Ecol	Angiospermae	Microsatellites	Subtidal	Temperate	Mediterranean
2015	Johansson	Mol Ecol	Heterokontophyta	Microsatellites	Subtidal	Temperate	North Pacific
2015	Jorde	Mol Ecol	Arthropoda	Microsatellites	Subtidal	Polar/Subpolar	North Atlantic
2015	Liggins (online first)	J Biogeogr	Chordata	mtDNA	Subtidal	Tropical	Indo-Pacific
2015	Mege	Mar Ecol	Cnidaria	Microsatellites	Subtidal	Tropical	Caribbean
2015	Portnoy	Mol Ecol	Chordata	Multiple	Subtidal	Temperate	N. Atlantic + GOM
2015	Quemere	J Biogeogr	Chordata	Microsatellites	Diadr. or Estuar.	Temperate	N. Atlantic Estuaries
2015	Saenz-Agudelo	Mol Ecol	Chordata	SNPs	Subtidal	Tropical	Red Sea
2015	Saha	ICES J Mar Sci	Chordata	SNPs	Subtidal	Temperate	North Atlantic
2015	Sandoval-Castillo	MEPS	Chordata	Multiple	Subtidal	Temperate	North Pacific
2015	Sjoqvist	Mol Ecol	Heterokontophyta	Microsatellites	Pelagic	Temperate	North Sea/Baltic Sea
2015	Teske	MEPS	Mollusca	Microsatellites	Intertidal	Temperate	Indian + S. Pacific
2015	Thomas	Proc Roy Soc B	Cnidaria	Microsatellites	Subtidal	Tropical	Indian
2015	Young	Evol Appl	Chordata	Microsatellites	Subtidal	Polar/Subpolar	Southern
2014	Crandall	Bull Mar Sci	Echinodermata	mtDNA	Subtidal	Tropical	Indo-Pacific
2014	Daloia	Mol Ecol	Chordata	Multiple	Subtidal	Tropical	Caribbean
2014	Kesaniemi	Mar Biol	Annelida	Microsatellites	Diadr. or Estuar.	Temperate	North Sea/Baltic Sea
2014	Liggins	Bull Mar Sci	Echinodermata	mtDNA	Subtidal	Tropical	Indo-Pacific
2014	Milano	Mol Ecol	Chordata	SNPs	Subtidal	Temperate	N. Atlantic + Mediterr.

2014	Munguia-Vega	PeerJ	Chordata	mtDNA	Subtidal	Temperate	Gulf of California
2014	Nakajima	Mol Ecol	Angiospermae	Microsatellites	Intertidal + subtidal	Tropical	North Pacific
2014	Nanninga	Mol Ecol	Chordata	Microsatellites	Subtidal	Tropical	Red Sea
2014	Oliva	Mol Ecol	Angiospermae	Microsatellites	Subtidal	Temperate	Mediterranean
2014	Pujolar	Mol Ecol	Chordata	SNPs	Diadr. or Estuar.	Temperate	N. Atlantic Estuaries
2014	Robuchon	Mol Ecol	Heterokontophyta	Microsatellites	Intertidal + subtidal	Temperate	North Atlantic
2014	Rouger	Mol Ecol	Angiospermae	Microsatellites	Intertidal	Temperate	North Atlantic
2014	Schiavina	Mol Ecol	Arthropoda	Microsatellites	Intertidal	Temperate	Mediterranean
2014	Serrano	Mol Ecol	Cnidaria	Microsatellites	Subtidal	Tropical	Caribbean
2014	Sunday	Mol Ecol	Echinodermata	Microsatellites	Subtidal	Temperate	North Pacific
2014	Vandamme	Mol Ecol	Chordata	Multiple	Subtidal	Temperate	North Atlantic
2014	Viricel	Mol Ecol	Chordata	Multiple	Pelagic	Tropical	North Atlantic
2013	Andras	Mol Ecol	Cnidaria	Microsatellites	Subtidal	Tropical	Caribbean
2013	Bradbury	CJFAS	Chordata	Microsatellites	Diadr. or Estuar.	Temperate	N. Atlantic Estuaries
2013	Chust	Estuar Coast Shelf	Ang. + Mollusca	Microsatellites	Diadr. or Estuar.	Temperate	North Atlantic
2013	Coscia	Conserv Genet	Mollusca	Microsatellites	Intertidal	Temperate	North Atlantic
2013	DeFaveri	Evolution	Chordata	Multiple	Diadr. or Estuar.	Temperate	North Sea/Baltic Sea
2013	Gkafas	Aquat Biol	Chordata	Microsatellites	Subtidal	Temperate	Mediterranean
2013	Godhe	Proc Roy Soc B	Heterokontophyta	Microsatellites	Subtidal	Temperate	North Sea/Baltic Sea
2013	Hasselman	Mol Ecol	Chordata	Microsatellites	Diadr. or Estuar.	Temperate	N. Atlantic Estuaries
2013	Hess	Mol Ecol	Chordata	SNPs	Diadr. or Estuar.	Temperate	N. Pacific Estuaries
2013	Iacchei	Mol Ecol	Arthropoda	Multiple	Subtidal	Temperate	North Pacific
2013	Krueger-Hadfield	Mol Ecol	Rhodophyta	Microsatellites	Intertidal	Temperate	North Atlantic
2013	Lee	J R Soc Interface	Cnidaria	Multiple	Pelagic	Temperate	North Atlantic
2013	Pespeni	Mol Ecol	Echinodermata	Other	Intertidal + subtidal	Temperate	North Pacific
2013	Saavedra-Sotelo	Ecol Evol	Cnidaria	Other	Subtidal	Tropical	North Pacific
2013	Teacher	Evol Appl	Chordata	Other	Pelagic	Temperate	North Sea/Baltic Sea
2013	Therkildsen	Evol Appl	Chordata	SNPs	Subtidal	Polar/Subpolar	North Atlantic
2013	Vincent	Evolution	Chordata	SNPs	Diadr. or Estuar.	Temperate	N. Atlantic Estuaries
2013	Wei	MEPS	Mollusca	Microsatellites	Intertidal + subtidal	Temperate	South Pacific
2013	Wei	Mar Biol	Mollusca	Microsatellites	Intertidal + subtidal	Temperate	South Pacific
2012	Amaral	PloS ONE	Chordata	Microsatellites	Pelagic	Temperate	Multiple Oceans
2012	Berry	Mol Ecol	Chordata	Microsatellites	Subtidal	Tropical	Indian + S. Pacific
2012	Berry	Fish Oceanogr	Chordata	Microsatellites	Subtidal	Tropical	Indian
2012	Crandall	Mol Ecol	Mollusca	mtDNA	Intertidal + Diadr.	Tropical	South Pacific

2012	Foster	Mol Ecol	Cnidaria	Microsatellites	Subtidal	Tropical	Caribbean
2012	Knutsen	MEPS	Chordata	Microsatellites	Subtidal	Temperate	North Atlantic
2012	Limborg	Mol Ecol	Chordata	SNPs	Subtidal	Temperate	North Atlantic
2012	Paz-Garcia	Pac Sci	Cnidaria	Other	Subtidal	Tropical	North Pacific
2012	Roy	CJFAS	Chordata	Microsatellites	Subtidal	Temperate	North Atlantic
2011	Alberto	Mol Ecol	Heterokontophyta	Microsatellites	Subtidal	Temperate	North Pacific
2011	Coleman	J Ecol	Heterokontophyta	Microsatellites	Subtidal	Temperate	South Pacific + Indian
2011	Matala	T Am Fish Soc	Chordata	Multiple	Diadr. or Estuar.	Temperate	N. Pacific Estuaries
2011	Mendez	Heredity	Chordata	mtDNA	Subtidal	Tropical	Indian
2011	Olsen	Conserv Genet	Chordata	Microsatellites	Diadr. or Estuar.	Polar/Subpolar	N. Pacific Estuaries
2011	Puritz	Nature Commun	Echinodermata	Multiple	Intertidal + subtidal	Temperate	North Pacific
2011	Schunter	Mol Ecol	Chordata	Microsatellites	Subtidal	Temperate	Mediterranean
2010	Alberto	Ecology	Heterokontophyta	Microsatellites	Subtidal	Temperate	North Pacific
2010	Banks	Mol Ecol	Echinodermata	Microsatellites	Subtidal	Temperate	South Atlantic
2010	Fraser	BMC Evol Biol	Heterokontophyta	Multiple	Subtidal	Temperate	South Pacific
2010	Galindo	Mol Ecol	Arthropoda	Multiple	Intertidal	Temperate	North Pacific
2010	Gonzalez-Wanguemert	J Exp Mar BiolEcol	Chordata	Multiple	Subtidal	Temperate	N. Atlantic + Mediterr.
2010	Mendez	Mol Ecol	Chordata	Multiple	Subtidal	Temperate	South Atlantic
2010	Selkoe	Mol Ecol	Multiple	Microsatellites	Subtidal	Temperate	North Pacific
2010	White	Proc Roy Soc B	Mollusca	Microsatellites	Subtidal	Temperate	North Pacific
2010	White	Mol Ecol	Chordata	Microsatellites	Subtidal	Temperate	North Atlantic
2009	Gaggiotti	Evolution	Chordata	Microsatellites	Pelagic	Temperate	North Sea/Baltic Sea
2009	Gonzalez-Wanguemert	Biochem Syst Ecol	Mollusca	Other	Subtidal	Temperate	Mediterranean
2009	Knutsen	Mol Ecol	Chordata	Microsatellites	Subtidal	Polar/Subpolar	North Atlantic
2009	McInerney	Aquat Biol	Mollusca	Microsatellites	Intertidal	Temperate	North Atlantic
2009	Nielsen	BMC Evol Biol	Chordata	SNPs	Subtidal	Temperate	North Atlantic
2009	Pampoulie	ICES J Mar Sci	Chordata	Microsatellites	Subtidal	Polar/Subpolar	North Atlantic
2009	Sala-Bozano	Mol Ecol	Chordata	Multiple	Subtidal	Temperate	N. Atlantic + Mediterr.
2008	Schultz	Mol Ecol	Chordata	Multiple	Subtidal	Tropical	Multiple Oceans
2007	Banks	Ecology	Echinodermata	Microsatellites	Subtidal	Temperate	South Pacific
2007	Fontaine	BMC Biology	Chordata	Microsatellites	Subtidal	Temperate	North Atlantic
2006	Barreiro	Mar Biol	Mollusca	Other	Subtidal	Temperate	North Atlantic
2006	Galindo	Curr Biol	Cnidaria	Multiple	Subtidal	Tropical	Caribbean
2006	Selkoe	Ecology	Chordata	Microsatellites	Subtidal	Temperate	North Pacific

Reference list for seascape genetic papers from 2006-2015

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