**APPENDIX C**

**Table 1**.Isolation by distance (IBD) in pond-breeding amphibians. The complete reference is given at the end of the table.

|  |  |  |
| --- | --- | --- |
| IBD | Species | Reference |
| No | *Notophthalmus viridescens* | Burkhart et al. 2017 |
| No | *Ichthyosaura alpestris* | Emaresi et al. 2011 |
| No | *Alytes obstetricans* | Garcia-Gonzalez et al. 2012 |
| No | *Ambystoma opacum* | Greenwald et al. 2009a |
| No | *Rana dalmatina* | Lesbarrères et al. 2006 |
| No | *Pelophylax ridibundus* | Mikulíček & Pišút 2012 |
| No | *Anaxyrus boreas* | Moore et al. 2011 |
| No | *Physalaemus cuvieri* | Pires de Campos Telles et al. 2007 |
| No | *Ambystoma maculatum* | Purrenhage et al. 2009 |
| No | *Rana arvalis* | Richter‐Boix et al. 2013 |
| Yes | *Rana arvalis* | Knopp & J. Merilä 2009 |
| No | *Rana temporaria* | Saarikivi et al. 2013 |
| Yes | *Rana temporaria* | Johansson et al. 2005, Johansson et al. 2006 |
| No | *Triturus macedonicus* | Sotiropoulos et al. 2013 |
| Yes | *Hyla arborea* | Angelone & Holderegger 2009, Angelone et al. 2011, Krug & Pröhl 2013 |
| Yes | *Salamandra salamandra* | Bani et al. 2015 |
| Yes | *Ambystoma opacum* | Greenwald et al. 2009b, Burkhart et al. 2017 |
| Yes | *Ambystoma maculatum* | Greenwald et al. 2009b, Richardson 2012, Coster et al. 2015, Burkhart et al. 2017 |
| Yes | *Ambystoma annulatum* | Burkhart et al. 2017 |
| Yes | *Ichthyosaura alpestris* | van Buskirk 2012, Prunier et al. 2014 |
| Yes | *Rana temporaria* | van Buskirk 2012, Lenhardt et al. 2017 |
| Yes | *Anaxyrus cognatus* | Chan & Zamudio 2009 |
| Yes | *Scaphiopus couchii* | Chan & Zamudio 2009 |
| Yes | *Lithobates sylvaticus* | Crosby et al. 2009, Zellmer & Knowles 2009, Peterman et al. 2013, Richardson 2012, Coster et al. 2015 |
| Yes | *Epidalea calamita* | Stevens et al. 2006, Oromi et al. 2012, Cox et al. 2017, Faucher et al. 2017 |
| Yes | *Ambystoma jeffersonianum* | Crawford et al. 2016 |
| Yes | *Rana boylii* | Dever 2007 |
| Yes | *Rhinella ornata* | Dixo et al. 2009 |
| Yes | *Rana luteiventris* | Funk et al. 2005, Goldberg et al. 2010, Murphy et al. 2010a |
| Yes | *Pseudacris maculata* | Funk et al. 2016 |
| Yes | *Ambystoma macrodactylum* | Goldberg et al. 2010, Savage et al. 2010 |
| Yes | *Ambystoma laterale* | Greenwald et al. 2009b |
| Yes | *Pelobates cultripes* | Gutiérrez‐Rodríguez et al. 2017 |
| Yes | *Pleurodeles waltl* | Gutiérrez‐Rodríguez et al. 2017 |
| Yes | *Bufo andrewsi* | Guo et al. 2016 |
| Yes | *Hyla squirella* | Hether & Hoffman 2012 |
| Yes | *Salamandra infraimmaculata* | Kershenbaum et al. 2012 |
| Yes | *Rana japonica* | Kobayashi et al. 2012 |
| Yes | *Physalaemus pustulosus* | Lampert et al. 2003 |
| Yes | *Hyla wrightorum* | Mims et al. 2016 |
| Yes | *Hyla arenicolor* | Mims et al. 2015 |
| Yes | *Anaxyrus punctatus* | Mims et al. 2015 |
| Yes | *Spea multiplicata* | Mims et al. 2015 |
| Yes | *Anaxyrus boreas* | Murphy et al. 2010b |
| Yes | *Lissotriton vulgaris* | Sotiropoulos et al. 2013 |
| Yes | *Ascaphus truei* | Spear et al. 2008, Aguilar et al. 2013 |
| Yes | *Ambystoma tigrinum* | Spear et al. 2005 |
| Yes | *Alytes obstetricans* | Tobler et al. 2013 |
| Yes | *Rana arvalis* | Vos et al. 2001 |
| Yes | *Anaxyrus exsul* | Wang 2009 |
| Yes | *Anaxyrus canorus* | Wang 2012 |
| Yes | *Hynobius nebulosus* | Yamane & Nishida 2010 |
| Yes | *Acris blanchardi* | Youngquist et al. 2017 |
| Yes | *Amietia wittei* | Zancolli et al. 2014 |
| Yes | *Amietia angolensis* | Zancolli et al. 2014 |
| Yes | *Rana chensinensis* | Zhan et al. 2009 |

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**Table 2**. Landscape factors on genetic divergence in pond-breeding amphibians. The effect on genetic divergence can be positive (‘+’, i.e. higher genetic variation between demes) or negative (‘-’, i.e. lower genetic variation between demes). The complete reference is given at the end of the table.

|  |  |  |  |
| --- | --- | --- | --- |
| Factor | Effect | Species | Reference |
| Elevation and slope | (+)  (+)  (+)  (+)  (+)  (+)  (+)  (+)  (+)  (+)  (-)  (+)  (+)  (+)  (-)  (+)  (+)  (-)  (+)  (-) | *Salamandra salamandra*  *Ambystoma maculatum*  *Lithobates sylvaticus*  *Rana luteiventris*  *Pseudacris maculata*  *Ambystoma macrodactylum*  *Pelobates cultripes*  *Pleurodeles waltl*  *Salamandra infraimmaculata*  *Hyla wrightorum*  *Hyla arenicolor*  *Anaxyrus punctatus*  *Spea multiplicata*  *Rana luteiventris*  *Epidalea calamita*  *Ascaphus truei*  *Ambystoma tigrinum*  *Bufo canorus*  *Amietia wittei*  *Amietia angolensis* | Bani et al. 2015  Coster et al. 2015  Coster et al. 2015  Funk et al. 2005  Funk et al. 2016  Giordano et al. 2007, Savage et al. 2010  Gutiérrez-Rodriguez et al. 2017  Gutiérrez-Rodriguez et al. 2017  Kershenbaum et al. 2014  Mims et al. 2016  Mims et al. 2015  Mims et al. 2015  Mims et al. 2015  Murphy et al. 2010  Oromi et al. 2012  Spear & Storfer 2008  Spear et al. 2005  Wang 2012  Zancolli et al. 2014  Zancolli et al. 2014 |
| Topographic distance | (+)  (+)  (+)  (+)  (+)  (+)  (+)  (+)  (+) | *Ascaphus truei*  *Ambystoma annulatum*  *Ambystoma macrodactylum*  *Rana luteiventris*  *Anaxyrus boreas*  *Ascaphus truei*  *Ambystoma tigrinum*  *Anaxyrus exsul*  *Anaxyrus canorus* | Aguilar et al. 2013  Burkhart et al. 2017  Goldberg & Waits 2010  Goldberg & Waits 2010  Murphy et al. 2010  Spear et al. 2012  Spear et al. 2005  Wang 2009  Wang 2012 |
| Pond network density | (-)  (-)  (-) | *Hyla arborea*  *Lithobates sylvaticus*  *Ambystoma macrodactylum* | Angelone & Holderegger 2009, Angelone et al. 2011  Coster et al. 2015  Savage et al. 2010 |
| River | (-)  (+)  (-)  (+)  (-)  (+) | *Hyla arborea*,  *Physalaemus pustulosus*  *Pelophylax ridibundus*  *Ambystoma maculatum*  *Ambystoma tigrinum*  *Hynobius nebulosus* | Angelone et al. 2011  Lampert et al. 2003  Mikulíček & Pišút 2011  Richardson 2012  Spear et al. 2005  Yamane & Nishida 2010 |
| River distance | (+)  (+)  (+) | *Rana luteiventris*  *Amietia wittei*  *Amietia angolensis* | Funk et al. 2005  Zancolli et al. 2014  Zancolli et al. 2014 |
| Watershed | (-)  (-)  (-)  (-)  (-)  (-) | *Rana luteiventris*  *Hyla arenicolor*  *Anaxyrus punctatus*  *Spea multiplicata*  *Rana luteiventris*  *Triturus macedonicus* | Goldberg & Waits 2010  Mims et al. 2015  Mims et al. 2015  Mims et al. 2015  Murphy et al. 2010  Sotiropoulos et al. 2013 |
| Lake | (+)  (+)  (+) | *Hyla arborea*,  *Bufo exsul*  *Odorrana schmackeri* | Angelone et al. 2011  Wang 2009  Wang et al. 2012 |
| Salt water | (+)  (+)  (+) | *Anaxyrus boreas*  *Pelophylax nigromaculatus*  *Hynobius nebulosus* | Moore et al. 2011  Wang et al. 2014  Yamane & Nishida 2010 |
| Meadow and grassland | (-)  (-) | *Hyla arborea*,  *Rana luteiventris* | Angelone et al. 2011  Goldberg & Waits 2010 |
| Forest | (+)  (-)  (+)  (-)  (-)  (+)  (-)  (-)  (+)  (-)  (-)  (-) | *Hyla arborea*,  *Ambystoma maculatum*  *Epidalea calamita*  *Ambystoma jeffersonianum*  *Ambystoma macrodactylum*  *Rana luteiventris*  *Ambystoma opacum*  *Ambystoma laterale*  *Pelobates cultripes*  *Hyla squirella*  *Rana temporaria*  *Hyla wrightorum* | Angelone et al. 2011  Coster et al. 2015  Cox et al. 2017  Crawford et al. 2016  Goldberg & Waits 2010  Goldberg & Waits 2010  Greenwald et al. 2009b  Greenwald et al. 2009b  Gutiérrez-Rodriguez et al. 2017  Hether & Hoffman 2012  Lenhardt et al. 2017  Mims et al. 2016 |
| Forest disturbance and harvesting | (-)  (+)  (+)  (+) | *Ambystoma maculatum*  *Lithobates sylvaticus*  *Rana luteiventris*  *Ascaphus truei* | Coster et al. 2015  Coster et al. 2015  Goldberg & Waits 2010  Spear & Storfer 2008, Spear et al. 2012 |
| Open shrubs | (-)  (-) | *Ambystoma tigrinum*  *Ambystoma californiense* | Spear et al. 2005  Wang et al. 2009 |
| Hedgerow | (-) | *Hyla arborea*, | Angelone et al. 2011 |
| Urban area | (+)  (+)  (+)  (+)  (+)  (+)  (+)  (+)  (+)  (+)  (+)  (+) | *Salamandra salamandra*  *Rana temporaria*  *Ichthyosaura alpestris*  *Epidalea calamita*  *Physalaemus cuvieri*  *Epidalea calamita*  *Ambystoma macrodactylum*  *Rana luteiventris*  *Ambystoma opacum*  *Pelobates cultripes*  *Rana japonica*  *Amietia angolensis* | Bani et al. 2015, Pisa et al. 2015  van Buskirk et al. 2012  van Buskirk et al. 2012, Emaresi et al. 2011  Cox et al. 2017  de Campos Telles et al. 2007  Faucher et al. 2017  Goldberg & Waits 2010  Goldberg & Waits 2010  Greenwald et al. 2009a  Gutiérrez-Rodriguez et al. 2017  Kobayashi et al. 2013  Zancolli et al. 2014 |
| Road | (+)  (+)  (+)  (+)  (+)  (+)  (+)  (+)  (+)  (+)  (+)  (+)  (+)  (+) | *Salamandra salamandra*  *Rana temporaria*  *Ambystoma maculatum*  *Lithobates sylvaticus*  *Ichthyosaura alpestris*  *Alytes obstetricans*  *Ambystoma opacum*  *Pelobates cultripes*  *Rana japonica*  *Rana dalmatina*  *Lithobates sylvaticus*  *Lissotriton vulgaris*  *Rana arvalis*  *Acris blanchardi* | Bani et al. 2015, Pisa et al. 2015  van Buskirk et al. 2012  Coster et al. 2015  Crosby et al. 2009  Emaresi et al. 2011  Garcia-Gonzalez et al. 2012  Greenwald et al. 2009a  Gutiérrez-Rodriguez et al. 2017  Kobayashi et al. 2013  Lesbarrères et al. 2006  Richardson 2012  Sotiropoulos et al. 2013  Vos et al. 2001  Youngquist et al. 2017 |
| Railroad | (+)  (+) | *Ambystoma opacum*  *Rana arvalis* | Bartoszek & Greenwald 2009  Vos et al. 2001 |
| Soil moisture | (-)  (-) | *Ambystoma maculatum*  *Ambystoma opacum* | Burkhart et al. 2017  Burkhart et al. 2017 |
| Solar radiation | (+) | *Ascaphus truei* | Spear & Storfer 2008 |
| Agricultural field | (+)  (+)  (+)  (+)  (+)  (+)  (+)  (+) | *Rana temporaria*  *Ichthyosaura alpestris*  *Ambystoma jeffersonianum*  *Epidalea calamita*  *Rana luteiventris*  *Ambystoma opacum*  *Ambystoma laterale*  *Lithobates sylvaticus* | van Buskirk et al. 2012  van Buskirk et al. 2012  Crawford et al. 2016  Faucher et al. 2017  Goldberg & Waits 2010  Greenwald et al. 2009a, Greenwald et al. 2009b  Greenwald et al. 2009b  Zellmer & Knowles 2009 |
| Vineyard | (+)  (+) | *Ichthyosaura alpestris*  *Rana temporaria* | Emaresi et al. 2011  Lenhardt et al. 2017 |

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