

<i>Cycloramphus eleutherodactylus</i>				X			Present study
<i>Eupsophus emilitopugini</i>	X						FORMAS & POBLETE 1996
<i>Macrogenioglottus alipioi</i>	X			X			Present study
<i>Odonotophrynus americanus</i>	X			X			Present study
<i>Proceratophrys boiei</i>	X						Present study
<i>Proceratophrys cururu</i>	X			X			Present study
Dendrobatidae							
<i>Oophaga pumilio</i>						X	HAGMAN 2006
Dicroglossidae							
<i>Hoplobatrachus tigerinus</i>	X						BRODIE JR & NUSSABAUM 1987
Hemiphractidae							
<i>Stefania woodleyi</i>	X						KOK et al. 2007
Hylidae							
<i>Acris crepitans</i>	X						MCCALLUM 1999
<i>Acris gryllus</i>	X			X			MARCHISIN & ANDREWS 1978
<i>Aplastodiscus arillidae</i>				X		X	Present study
<i>Bokermannohyla alvarengai</i>						X	Present study
<i>Bokermannohyla circumdata</i>	X			X		X	Present study
<i>Bokermannohyla hylax</i>	X			X		X	Present study
<i>Bokermannohyla luctuosa</i>						X	Present study
<i>Corythomantis greeningi</i>							JARED et al. 2005
<i>Hyla arenicolor</i>						X	POWELL & LIEB 2003

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<i>Scinax similis</i>				X					Present study
<i>Trahycephalus</i> <i>venulosus</i>	X	X			X				MANZANILLA et al. 1998; Present study NAPOLI 2001
<i>Xenohyla truncata</i>		X							
Hyperoliidae									
<i>Kassina cochranae</i>	X								CHANNING & HOWELL 2003
<i>Kassina kuvangensis</i>	X								CHANNING & HOWELL 2003
<i>Kassina lamottei</i>	X								CHANNING & HOWELL 2003
<i>Kassina maculata</i>	X								CHANNING & HOWELL 2003
<i>Phyllomantis</i> <i>verrucosus</i>									
Leiopelmatidae									
<i>Leiopelma archeyi</i>	X								GREEN 1988
<i>Leiopelma hamiltoni</i>	X								GREEN 1988
<i>Leiopelma</i> <i>hochstetteri</i>	X								GREEN 1988
Leiuperidae									
<i>Eutpepiphix nattereri</i>	X	X							RODRIGUES & OLIVEIRA FILHO 2004
<i>Pleurodema thaul</i>									KOLENC et al. 2009
Leptodactylidae									
<i>Leptodactylus fuscus</i>									Present study
<i>Leptodactylus</i> <i>labyrinthicus</i>	X	X				X			TOLEDO et al. 2005; Present study
<i>Leptodactylus lairams</i>						X			Present study
<i>Leptodactylus</i> <i>mystaceus</i>									Present study
<i>Leptodactylus</i> <i>mystacinus</i>	X	X							CARVALHO JR 2005; Present study

(Continued)

Appendix 1.
(Continued)

Species	Chin-tucking	Crouching down	Puffing up the body	Hiding	Cloacal discharge	Spine-puncturing	Spine-scratching	Spine-traumatising	Secretion (odour)	Secretion (adhesive)	Secretion (noxious)	Secretion (slippery)	Source
Limnodynastidae													
<i>Heleioporus eyrei</i>	X	X											WILLIAMS et al. 2000
<i>Limnodynastes tasmaniensis</i>	X	X											WILLIAMS et al. 2000
<i>Neobatrachus pictus</i>	X	X	X										WILLIAMS et al. 2000
<i>Neobatrachus sudelli</i>	X	X	X										WILLIAMS et al. 2000
<i>Notaden melanoscaphus</i>	X	X	X										WILLIAMS et al. 2000
<i>Notaden nicholksi</i>	X	X	X										WILLIAMS et al. 2000
Mantellidae													
<i>Boophis albilabris</i>								X					ANDREONE 2002
<i>Mantella laevigata</i>									X				HEYING 2001
Microhylidae													
<i>Ctenophryne geayi</i>	X	X	X										MENIN & RODRIGUES 2007
<i>Elachistocleis enythrogaster</i>			X										KWET & SOLE 2002
<i>Elachistocleis ovalis</i>			X										KOKUBUM & MENIN 2002
<i>Gastrophryne carolinensis</i>		X		X									MARCHISIN & ANDREWS 1978
<i>Kaloula pulchra</i>			X										CHUANKEERN et al. 2008
<i>Phrynomantis microps</i>		X											RÖDEL & BRAUN 1999
<i>Plethodonohyla tuberata</i>		X	X	X							X		NINCHERI & ANDREONE 2002
Myobatrachidae													
<i>Crinia glauerti</i>	X	X	X										WILLIAMS et al. 2000

<i>Mixophyes fasciolatus</i>	X	X								WILLIAMS et al. 2000
<i>Paracrinia haswelli</i>	X	X								WILLIAMS et al. 2000
<i>Pseudophryne bibroni</i>	X	X	X							WILLIAMS et al. 2000
<i>Pseudophryne sentinamoraia</i>	X	X	X							WILLIAMS et al. 2000
<i>Uperoleia laevigata</i>		X								TORR 1991
Pipidae										
<i>Pipa pipa</i>			X							Present study
<i>Xenopus laevis</i>				X						Present study
Ranidae										
<i>Lithobates capito</i>							X			GRANT 2001; MEANS 2004
<i>Lithobates clamitans</i>	X	X	X							MARCHISIN & ANDREWS 1978
<i>Lithobates palustris</i>	X	X	X	X				X		MARCHISIN & ANDREWS 1978; GRANT 2001
<i>Lithobates pipiens</i>	X	X	X							MARCHISIN & ANDREWS 1978
<i>Lithobates septentrionalis</i>								X		GRANT 2001
<i>Lithobates sylvaticus</i>		X								MCCALLUM et al. 2003
<i>Rana muscosa</i>								X		GRANT 2001
Scaphiopodidae										
<i>Spea hammondi</i>								X		WAYE & SHEWCHUK 1995
<i>Scaphiopus holbrookii</i>		X								MARCHISIN & ANDREWS 1978
<i>Spea intermontana</i>								X		WAYE & SHEWCHUK 1995
<i>Spea multiplicata</i>		X								LIVO et al. 1997

Appendix 2.

Frog species that display body-raising (“legs vertically stretched” and “legs laterally stretched”) and “legs laterally stretched” types and body-tilting. Presence/absence of aposematic (warning) colouration in the posterior region (post-femoral and groin), eyespot-like glands, and noxious skin secretions. See text for further explanations. Families, genera, and species in alphabetical order.

Species	Body-raising type	Aposematic colouration	Noxious skin secretion	Intensity of body-raising	Body-tilting	Source
Bufo						
<i>Inclitus alvarius</i>	Legs vertical	No	Yes	Full	Yes	HANSON & VIAL 1956
<i>Rhinella ornata</i>	Legs vertical	No	Yes	Full	Yes	TOLEDO 2004b
Ceratophryidae						
<i>Atelognathus praebasaliticus</i>	Legs vertical	No	?	Full	?	CEI 1980
Cycloramphidae						
<i>Eupsophus emiltoppugini</i>	Legs vertical	?	?	?	?	FORMAS & POBLETE 1996
<i>Macrogenioglottus alipioi</i>	Both	Yes	?	Full	Yes	Present study
<i>Thoropa taophora</i>	Legs vertical	Yes	?	Full	?	I. MARTINS pers. comm.
Dendrobatidae						
<i>Ameerega flavopicta</i>	Legs vertical	Yes	Yes	Partial	No	TOLEDO et al. 2004
Dicroglossidae						
<i>Hoplobatrachus tigerinus</i>	Legs vertical	No	Yes	Partial	?	BRODIE JR & NUSSABAUM 1987
Hylidae						
<i>Aplastodiscus albosignatus</i>	Legs lateral	No	?	NA	Yes	Present study
<i>Aplastodiscus arildae</i>	Legs lateral	No	?	NA	Yes	Present study
<i>Aplastodiscus callipygius</i>	Legs lateral	No	?	NA	Yes	Present study
<i>Aplastodiscus coehranae</i>	Legs lateral	No	?	NA	Yes	Present study
<i>Aplastodiscus leucopygius</i>	Legs lateral	No	?	NA	Yes	Present study
<i>Aplastodiscus perviridis</i>	Legs lateral	No	?	NA	Yes	Present study
<i>Hyla versicolor</i>	Legs vertical	Yes	Yes	Partial	Yes	BRODIE JR & FORMANOWICZ 1981
<i>Hyloscirtus tapichalaca</i>	Legs lateral	?	?	NA	?	KIZIRIAN et al. 2003
<i>Hypsiboa semilineatus</i>	Legs lateral	?	?	NA	?	AZEVEDO-RAMOS 1995
<i>Litoria alboguttata</i>	Legs vertical	Yes	Yes	Full	Yes	WILLIAMS et al. 2000
<i>Litoria aturea</i>	Legs vertical	Yes	Yes	Partial	Yes	WILLIAMS et al. 2000

<i>Litoria australis</i>	Legs vertical	No	No	Full	?	WILLIAMS et al. 2000
<i>Litoria caerulea</i>	Legs vertical	Yes	Yes	Partial	Yes	WILLIAMS et al. 2000
<i>Litoria cultripes</i>	Both	No	No	Partial	?	WILLIAMS et al. 2000
<i>Litoria novaehollandiae</i>	Legs vertical	No	No	Partial	?	WILLIAMS et al. 2000
<i>Xenohyla truncata</i>	Legs lateral	?	?	NA	?	NAPOLI 2001
Hyperoliidae						
<i>Phyllotimantis boulengeri</i>	Legs vertical	Yes	?	?	?	RÖDEL & ERNST 2001
<i>Phyllotimantis keithae</i>	Legs vertical	Yes	?	?	?	RÖDEL & ERNST 2001
Leuperidae						
<i>Edalorhina perezii*</i>	Legs vertical	No	Yes	Partial	Yes	Present study
<i>Eupemphix nattereri*</i>	Legs vertical	No	Yes	Partial	Yes	SAZIMA & CARAMASCHI 1986; LENZI-MATTOS et al. 2005
<i>Physalaemus deimaticus*</i>	Legs vertical	No	Yes	Partial	Yes	SAZIMA & CARAMASCHI 1986
<i>Physalaemus marmoratus</i>	Legs vertical	No	Yes	Partial	Yes	Present study
<i>Pleurodema bibroni*</i>	Legs vertical	Yes	Yes	Partial	Yes	KOLENC et al. 2009
<i>Pleurodema brachyops*</i>	Legs vertical	Yes	Yes	Partial	?	MARTINS 1989
<i>Pleurodema bifoninum*</i>	Legs vertical	No	Yes	Partial	?	CEI 1962; KOLENC et al. 2009
<i>Pleurodema kriegi*</i>	Legs vertical	No	Yes	Partial	?	CEI 1962; KOLENC et al. 2009
<i>Pleurodema thaul*</i>	Legs vertical	No	Yes	Partial	?	CEI & ESPINA 1957; KOLENC et al. 2009
Leptodactylidae						
<i>Leptodactylus labyrinthicus</i>	Legs vertical	Yes	Yes	Full	Yes	TOLEDO et al. 2005
<i>Leptodactylus laticeps</i>	Legs vertical	Yes	Yes	Full	Yes	CEI 1980; HEYER & SCOTT JR. 2006
<i>Leptodactylus latrans</i>	Legs vertical	No	No	Partial	Yes	Present study
<i>Leptodactylus mystacinus</i>	Legs vertical	Yes	Yes	Full	Yes	CARVALHO JR 2005
Limnodynastidae						
<i>Heleioporus eyrei</i>	Legs vertical	No	Yes	Full	?	WILLIAMS et al. 2000
<i>Limnodynastes convexisculus</i>	Legs vertical	No	No	Partial	?	WILLIAMS et al. 2000
<i>Limnodynastes dumerilii</i>	Legs vertical	No	No	Partial	?	WILLIAMS et al. 2000
<i>Limnodynastes lignarius</i>	Legs vertical	No	No	Partial	?	WILLIAMS et al. 2000
<i>Limnodynastes tasmaniensis</i>	Legs vertical	No	No	Full	?	WILLIAMS et al. 2000

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Appendix 2.
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Species	Body-raising type	Aposematic colouration	Noxious skin secretion	Intensity of body-raising	Body-tilting	Source
<i>Limnodynastes terraereginae</i>	Legs vertical	Yes	No	Partial	?	WILLIAMS et al. 2000
<i>Platyplectrum spenceri</i>	Legs vertical	No	No	Partial	?	WILLIAMS et al. 2000
Microhylidae						
<i>Ctenophryne geayi</i>	Legs vertical	No	?	Partial	?	MENIN & ROGRIGUES 2007
<i>Elachistocleis erythrogaster</i>	Legs lateral	?	?	NA	?	KWET & SOLÉ 2002
<i>Elachistocleis ovalis</i>	Both	Yes	No	Partial	?	KOKUBUM & MENIN 2002
<i>Phrynomantis microps</i>	Legs lateral	?	?	NA	?	RÖDEL & BRAUN 1999
<i>Plethodontohyla tuberata</i>	Legs vertical	Yes	?	?	?	NINCHERI & ANDREONE 2002
Myobatrachidae						
<i>Pseudophryne bibronii</i>	Legs lateral	Yes	Yes	NA	?	WILLIAMS et al. 2000
<i>Pseudophryne seminarmorata</i>	Legs lateral	Yes	Yes	NA	?	WILLIAMS et al. 2000
<i>Uperoleia altissima</i>	Legs vertical	Yes	Yes	Partial	Yes	WILLIAMS et al. 2000
<i>Uperoleia aspera</i>	Legs vertical	Yes	Yes	Partial	?	BRODIE JR et al. 1998
<i>Uperoleia borealis</i>	Legs vertical	Yes	Yes	Partial	?	BRODIE JR et al. 1998
<i>Uperoleia laevigata</i>	Legs vertical	Yes	Yes	Partial	Yes	TORR 1991
<i>Uperoleia lithomoda</i>	Legs vertical	Yes	Yes	Partial	Yes	BRODIE JR et al. 1998
<i>Uperoleia litilejohni</i>	Legs vertical	Yes	Yes	Partial	Yes	WILLIAMS et al. 2000
<i>Uperoleia mjobergii</i>	Legs vertical	No	Yes	Full	?	BRODIE JR et al. 1998
<i>Uperoleia tapia</i>	Legs vertical	No	Yes	Full	?	BRODIE JR et al. 1998
Scaphiropodidae						
<i>Spea intermontana</i>	Legs vertical	No	?	Partial	Yes	WAYE & SHEWCHUK 1995
Strabomantidae						
<i>Pristimantis curtipes</i>	Legs vertical	No	No	NA	?	DUPELLMAN & TRUEB 1994

*Species with eyespot-like glands. NA = not applicable.

Appendix 3.

Frog species that bite and mouth-gape defensively, presence/absence of parental care, batrachophagic habits and defensive vocalisation.

	Family/Species	Parental care	Frog eating	Defensive vocalisation	Source
Biting	Centrolenidae				
	<i>Hyalinobatrachium colymbiphyllum</i>	Yes	No	No	DRAKE & RANVESTEL 2005
	Ceratobatrachidae				
	<i>Ceratobatrachus guentheri</i>	?	?	?	NOBLE 1931
	Ceratophryidae				
	<i>Ceratophrys aurita</i>	No	Yes	Yes	Present study
	<i>Ceratophrys cranwelli</i>	No	Yes	?	FABREZI & EMERSON 2003
	<i>Ceratophrys joazeirensis</i>	No	Yes	Yes	Present study
	<i>Ceratophrys ornata</i>	No	Yes	Yes	DONOSO-BARROS 1972
	<i>Lepidobatrachus</i> sp.	?	Yes	Yes	FABREZI & EMERSON 2003
	Cycloramphidae				
	<i>Cycloramphus acangatan</i>	?	?	?	Present study
	<i>Cycloramphus boraceienseis</i>	Yes	Yes	?	HARTMANN et al. 2003; Present study
	<i>Cycloramphus dubius</i>	Yes	?	?	GIARETTA & CARDOSO 1995
	<i>Cycloramphus eleutherodactylus</i>	Yes	?	?	Present study
	<i>Cycloramphus lutzorum</i>	Yes	Yes	?	Present study
	<i>Cycloramphus</i> sp.	Yes	?	?	Present study
	Hemiphractidae				
	<i>Hemiphractus fasciatus</i>	Yes	Yes	Yes	MYERS 1966
	<i>Hemiphractus johnsoni</i>	Yes	Yes	?	M. BARBOSA pers. comm.
	Leptodactylidae				
	<i>Leptodactylus chaquensis</i>	Yes	Yes	?	Present study
	<i>Leptodactylus latrans</i>	Yes	Yes	Yes	VAZ-FERREIRA & GEHRAU 1974, 1975
	<i>Leptodactylus pentadactylus</i>	Yes	Yes	Yes	VILLA 1969
	Megophryidae				
	<i>Brachytarsophrys carinenses</i>	?	?	?	NOBLE 1931
<i>Megophrys</i> sp.	?	Yes	Yes	Present study	
Pyxicephalidae					
<i>Aubria subsigillata</i>	?	Yes	?	FABREZI & EMERSON 2003	
<i>Pyxicephalus adpersus</i>	Yes	Yes	Yes	COOK et al. 2001; FABREZI & EMERSON 2003	
<i>Pyxicephalus edulis</i>	Yes	Yes	?	LOVERIDGE 1945	
Mouth-gaping	Brachycephalidae				
	<i>Brachycephalus ephippium</i>	No	No	No	Present study
	<i>Brachycephalus hermogenesi</i>	No	No	No	Present study
	<i>Brachycephalus pitanga</i>	No	No	No	Present study

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Appendix 3.

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Family/Species	Parental care	Frog eating	Defensive vocalisation	Source
<i>Ischnocnema ramagii</i>	?	No	?	D. LOEBMANN pers. comm.
Ceratophryidae				
<i>Ceratophrys aurita</i>	No	Yes	Yes	Present study
<i>Ceratophrys joazeirensis</i>	No	Yes	Yes	Present study
Craugastoridae				
<i>Haddadus binotatus</i>	?	No	Yes	Present study
Cycloramphidae				
<i>Cycloramphus acangatan</i>	?	?	?	Present study
<i>Eupsophus emiliopugini</i>	?	?	Yes	FORMAS & POBLETE 1996
<i>Proceratophrys boiei</i>	No	Yes	?	R. SAWAYA pers. comm.
Hemiphractidae				
<i>Gastrotheca helenae</i>	Yes	?	Yes	DUPELLMANN & TRUEB 1994
<i>Hemiphractus johnsoni</i>	Yes	Yes	Yes	Present study
<i>Hemiphractus fasciatus</i>	Yes	Yes	Yes	MYERS 1966
<i>Hemiphractus scutatus</i>	Yes	Yes	Yes	P. BERNARDE pers. comm.
<i>Stefania woodleyi</i>	?	?	Yes	KOK et al. 2007
Hylidae				
<i>Bokermannohyla izecksohni</i>	No	No	Yes	I. MARTINS pers. comm.
Megophryidae				
<i>Megophrys</i> sp.	?	Yes	Yes	Present study