

## Egg toxic compounds in the animal kingdom. A comprehensive review.

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Table S1. Complete list of animal species with egg toxins

Classification	Species <sup>a</sup>	Toxin(s)	Reference <sup>b</sup>
<b>CNIDARIA</b>			
<b>Anthozoa</b>			
<b>Actiniaria</b>			
Edwardsiidae	<i>Nematostella vectensis</i> Stephenson, 1935	NvePTx1, NEP3, NEP3-like, NEP4	284
<b>Zoantharia</b>			
Sphenopidae	<i>Palythoa tuberculosa</i> (Esper, 1805)	Palytoxin	256
<b>PLATYHELMINTHES</b>			
<b>Rhabditophora</b>			
<b>Polycladida</b>			
Planoceridae	<i>Planocera multitentaculata</i> Kato, 1944	Tetrodotoxin	171
<b>Tricladida</b>			
Geoplanidae	<i>Bipalium adventitium</i> Hyman, 1943	Tetrodotoxin	172
<b>MOLLUSCA</b>			
<b>Cephalopoda</b>			
<b>Octopoda</b>			
Octopodidae	<i>Hapalochlaena lunulata</i> (Quoy & Gaimard, 1832)	Tetrodotoxin	175
	<i>Hapalochlaena maculosa</i> (Hoyle, 1883)	Tetrodotoxin	176
<b>Gastropoda</b>			
<b>Mesogastropoda</b>			
Ampullariidae	<i>Pomacea canaliculata</i> (Lamarck, 1828)	PcPV2	36
	<i>Pomacea maculata</i> Perry, 1810	PmPV2	35
Nudibranchia	<i>Hexabranchnus sanguineus</i> (Rüppell & Leuckart, 1830)	Kabiramide A-F, dihydrohalichondramide, 33- dihydrohalichondramide, ulapaulide A-B	239-241
<b>Hexabranchnidae</b>			
<b>Neogastropoda</b>			
Conidae	<i>Conus victoriae</i> Reeve 1843	O-conotoxins, α-conotoxins	33
<b>Pleurobranchida</b>			
Pleurobranchaeidae	<i>Pleurobranchaea maculata</i> (Quoy & Gaimard, 1832)	Tetrodotoxin	174
<b>Sacoglossa</b>			
Plakobranchnidae	<i>Elysia pusilla</i> (Bergh, 1871)	Halimedatetraacetate	71
<b>Umbraculida</b>			
Tylodiniidae	<i>Tylodina perversa</i> (Gmelin, 1791)	Isoxazoline alkaloids	156
<b>ARTHROPODA</b>			
<b>Arachnida</b>			
<b>Araneae</b>			
Theridiidae	<i>Latrodectus tredecimguttatus</i> (Rossi, 1790)	Latroeggt toxin I-III	30-32
<b>Xiphosura</b>			
Limulidae	<i>Carcinoscorpius rotundicauda</i> (Latreille, 1802)	Tetrodotoxin	173
<b>Crustacea</b>			
<b>Decapoda</b>			
Xanthidae	<i>Lophozozymus pictor</i> (Fabricius, 1798)	Palytoxin	258
<b>Insecta</b>			
<b>Coleoptera</b>			

Classification	Species <sup>a</sup>	Toxin(s)	Reference <sup>b</sup>
<b>Chrysomelidae</b>	<i>Acalymma vittatum</i> (Fabricius, 1775)	Cucurbitacin D	61, 62
	<i>Chrysolina coerulans</i> (Scriba, 1791)	Cardenolides	89
	<i>Chrysolina fuliginosa</i> (Olivier, 1807)	Cardenolides	97
	<i>Chrysolina polita</i> (Linnaeus, 1758)	Cardenolides	89
	<i>Chrysomela populi</i> Linnaeus, 1758	Isoxazoline glycosides, Salicin	198
	<i>Chrysomela saliceti</i> (Weise, 1884)	Isoxazoline glycosides, Salicin	198
	<i>Chrysomela tremulae</i> Fabricius, 1787	Isoxazoline glycosides, Salicin	198
	<i>Chrysomela vigintipunctata</i> (Scopoli, 1763)	Isoxazoline glycosides, Salicin	198
	<i>Diabrotica balteata</i> LeConte, 1865	Cucurbitacin D	61, 62
	<i>Diabrotica undecimpunctata howardi</i> Barber, 1947	Cucurbitacin D	61, 62
	<i>Galeruca tanacetii</i> (Linnaeus, 1758)	Anthraquinones, Anthrones	217
	<i>Galerucella californiensis</i> (Linnaeus, 1767)	Anthraquinones, Anthrones	215
	<i>Galerucella lineola</i> (Fabricius, 1781)	Anthraquinones, Anthrones	215
	<i>Galerucella nymphaeae</i> (Linnaeus, 1758)	Anthraquinones, Anthrones	215
	<i>Galerucella pusilla</i> (Duftschmid, 1825)	Anthraquinones, Anthrones	215
	<i>Galerucella tenella</i> (Linnaeus, 1761)	Anthraquinones, Anthrones	215
	<i>Gastrophysa viridula</i> (De Geer, 1775)	Isoxazoline glycosides	198
	<i>Lochmaea suturalis</i> (Thomson, 1866)	Anthraquinones, Anthrones	215
	<i>Oreina elongata</i> (Suffrian, 1851)	Cardenolides, Pyrrolizidine alkaloids	90
	<i>Oreina luctuosa</i> (Olivier, 1807)	Cardenolides	90
	<i>Paropsis atomaria</i> Olivier, 1807	Prunasin, (R)-mandelonitrile	73
	<i>Phratora laticollis</i> Suffrian, 1851	Isoxazoline glycosides	198
	<i>Phratora tibialis</i> (Suffrian, 1851)	Isoxazoline glycosides	198
	<i>Phratora vitellinae</i> (Linnaeus, 1758)	Isoxazoline glycosides, Salicin	198
<i>Plagioderma versicolora</i> (Laicharting, 1781)	Isoxazoline glycosides	198	
<i>Pyrrhalta viburni</i> (Paykull, 1799)	Anthraquinones	91	
<i>Trirhabda geminata</i> Horn, 1893	Anthraquinones	216	
<b>Coccinellidae</b>	<i>Adalia bipunctata</i> (Linnaeus, 1758)	Homotropane alkaloids, Piperidine alkaloids	143
	<i>Coccinella septempunctata</i> (Linnaeus, 1758)	Tricyclic alkaloids, Pyrrolizidine alkaloids	128, 142
	<i>Epilachna paenulata</i> (Germar, 1824)	Piperidine alkaloids	141
	<i>Epilachna varivestis</i> Mulsant, 1850	Alkaloids	140, 144
	<i>Exochomus quadripustulatus</i> (Linnaeus, 1758)	Tricyclic alkaloids	145
	<i>Harmonia axyridis</i> (Pallas, 1772)	Aliphatic alkaloids	142
	<i>Hippodamia convergens</i> Guerin-Meneville, 1842	Tricyclic alkaloids	142, 153
<b>Derodontidae</b>	<i>Laricobius nigrinus</i> Fender, 1945	Anthrones	218
	<i>Laricobius osakensis</i> Montgomery & Shiyake, 2011	Anthrones	218
<b>Lampyridae</b>	<i>Ellychnia corrusca</i> (Linnaeus, 1767)	Lucibufagin	111
	<i>Photinus ignitus</i> Fall, 1927	Lucibufagin	110
	<i>Photinus marginellus</i> LeConte, 1852	Lucibufagin	110
	<i>Photinus pyralis</i> (Linnaeus, 1767)	Lucibufagin	113
	<i>Photuris versicolor</i> Fabricius, 1798	Lucibufagin, N-methylquinolinum 2-carboxylate	109, 248
<b>Meloidae</b>	<i>Epicauta funebris</i> Horn 1873	Cantharidin	46
	<i>Hycleus lunatus</i> (Pallas, 1781)	Cantharidin	48
	<i>Hycleus scabiosae</i> (Olivier, 1811)	Cantharidin, Palosin, Palosininmide, Cantharinamide	264
	<i>Mylabris quadripunctata</i> (Linnaeus, 1767)	Cantharidin	48
<b>Oedemeridae</b>	<i>Nacerderes caudata</i> (Kono, 1936)	Cantharidin	50
	<i>Nacerderes katoi</i> (Kono, 1932)	Cantharidin	50
	<i>Nacerderes waterhousei</i> (Harold, 1875)	Cantharidin	50

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	<i>Oedemera femorata</i> (Scopoli, 1763)	Cantharidin	47, 52
	<i>Oedemera flavipes</i> (Fabricius, 1792)	Cantharidin	47
<b>Pyrochroidae</b>	<i>Neopyrochroa flabellata</i> (Fabricius, 1787)	Cantharidin	53
	<i>Schizotus pectinicornis</i> (Linnaeus, 1758)	Cantharidin	52
<b>Staphylinidae</b>	<i>Paederus fuscipes</i> Curtis, 1826	Pederin	229
	<i>Paederus riparius</i> (Linnaeus, 1758)	Pederin	232
	<i>Paederus sabaeus</i> Erichson, 1840	Pederin	227
<b>Diptera</b>			
<b>Ceratopogonidae</b>	<i>Atrichopogon trifasciatus</i> Kieffer, 1918	Cantharidin	47
<b>Tachinidae</b>	<i>Archytas aterrimus</i> (Robineau-Desvoidy, 1830)	Pyrrrolizidine alkaloids	127
	<i>Chetogena claripennis</i> (Macquart, 1848)	Pyrrrolizidine alkaloids	127
	<i>Lespesia aletiae</i> (Riley, 1879)	Pyrrrolizidine alkaloids	127
	<i>Lespesia</i> sp.	Pyrrrolizidine alkaloids	127
<b>Hemiptera</b>			
<b>Adelgidae</b>	<i>Adelges tsugae</i> Annand, 1924	Anthraquinones, Anthrones	218
<b>Dactylopiidae</b>	<i>Dactylopius confusus</i> (Cockerell, 1893)	Anthraquinones	219
<b>Lygaeidae</b>	<i>Caenocoris nerii</i> (Germar, 1847)	Cardenolides	92
	<i>Oncopeltus fasciatus</i> (Dallas, 1852)	Cardenolides	93
<b>Hymenoptera</b>			
<b>Braconidae</b>	<i>Cotesia zyaenarum</i> Marshall, 1885	Cyanogens	75
	<i>Heterogamus dispar</i> (Curtis, 1834)	Cyanogens	82
<b>Chalcididae</b>	<i>Brachymeria ovata</i> (Say, 1824)	Pyrrrolizidine alkaloids	127
<b>Eupelmidae</b>	<i>Eupelmus atropurpureus</i> Dalman, 1820	Cyanogens	82
	<i>Eupelmus vesicularis</i> (Retzius, 1783)	Cyanogens	82
<b>Ichneumonidae</b>	<i>Corsoncus</i> sp.	Pyrrrolizidine alkaloids	127
	<i>Gelis cursitans</i> (Fabricius, 1775)	Cyanogens	82
	<i>Itopectis viduata</i> (Gravenhorst, 1829)	Cyanogens	82
	<i>Listrognathus obnoxius</i> (Gravenhorst, 1829)	Cyanogens	82
<b>Lepidoptera</b>			
<b>Erebidae</b>	<i>Arctia caja</i> (Linnaeus, 1758)	Cajin, Pyrrrolizidine alkaloids	116, 123, 286
	<i>Cosmosoma myrodora</i> (Dyar, 1907)	Pyrrrolizidine alkaloids	121
	<i>Cretonotos transiens</i> Walker, 1855	Pyrrrolizidine alkaloids	119, 122
	<i>Hyalurga syma</i> Walker, 1854	Pyrrrolizidine alkaloids	117
	<i>Nyctemera annulata</i> (Boisduval, 1832)	Pyrrrolizidine alkaloids	115
	<i>Tyria jacobaeae</i> (Linnaeus, 1758)	Pyrrrolizidine alkaloids	120
	<i>Utetheisa ornatix</i> (Linnaeus, 1758)	Pyrrrolizidine alkaloids	118
<b>Lycaenidae</b>	<i>Eumaeus atala</i> (Poey, 1832)	Cycasin	81
<b>Nymphalidae</b>	<i>Actinote alalia</i> (Felder & Felder, 1860)	Linamarin	76
	<i>Actinote brylla</i> Oberthur, 1917	Linamarin	76
	<i>Actinote canutia</i> (Hopffer, 1874)	Linamarin	76
	<i>Actinote carycina</i> Jordan, 1913	Linamarin	76
	<i>Actinote genitrix</i> D'Almeida, 1922	Linamarin	76
	<i>Actinote hyalina</i> Jordan, 1913	Linamarin	76
	<i>Actinote mamita</i> (Burmeister, 1861)	Linamarin	76
	<i>Actinote parapheles</i> Jordan, 1913	Linamarin	76
	<i>Actinote pellenea</i> Hübner, 1821	Linamarin	76
	<i>Actinote pyrrrha</i> (Fabricius, 1775)	Linamarin	76
	<i>Actinote rhodope</i> D'Almeida, 1923	Linamarin	76
	<i>Actinote surima</i> (Schaus, 1902)	Linamarin	76

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	<i>Aeria olena</i> Weymer, 1875	Pyrrrolizidine alkaloids	124, 126
	<i>Agraulis vanillae</i> (Linnaeus, 1758)	Linamarin, Lotaustralin	74
	<i>Altinote hylonome</i> Doubleday, 1844	Cyanogens	76
	<i>Cethosia penthesilea</i> (Cramer, 1777)	Linamarin, Lotaustralin	74
	<i>Danaus chrysippus</i> (Linnaeus, 1758)	Cardenolides	87
	<i>Danaus gilippus</i> (Cramer, 1775)	Pyrrrolizidine alkaloids	124, 125
	<i>Danaus plexippus</i> (Linnaeus, 1758)	Cardenolides	87
	<i>Dryas iulia</i> (Fabricius, 1775)	Linamarin, Lotaustralin	74
	<i>Heliconius charithonia</i> (Linnaeus, 1767)	Cyanogens	78
	<i>Heliconius melpomene</i> (Linnaeus, 1758)	Linamarin, Lotaustralin	77
	<i>Hypothyris euclea</i> (Godart, 1819)	Pyrrrolizidine alkaloids	124
	<i>Ithomia agnosia</i> Hewitson, 1854	Pyrrrolizidine alkaloids	124
	<i>Mechanitis lysimnia</i> (Fabricius, 1793)	Pyrrrolizidine alkaloids	124
	<i>Mechanitis polymnia</i> Linnaeus, 1758	Pyrrrolizidine alkaloids	124, 126
	<i>Methona themisto</i> Hübner, 1816	Pyrrrolizidine alkaloids	124
	<i>Sais rosalia</i> Cramer, 1782	Pyrrrolizidine alkaloids	124
	<i>Thyridia psidii</i> Linnaeus, 1758	Pyrrrolizidine alkaloids	124
	<i>Tithorea harmonia</i> Cramer, 1779	Pyrrrolizidine alkaloids	124, 126
<b>Papilionidae</b>	<i>Atrophaneura alcinous</i> (Klug, 1836)	Aristolochic acids	203
	<i>Battus philenor</i> (Linnaeus, 1771)	Aristolochic acids	208
	<i>Parnassius phoebus</i> (Fabricius, 1793)	Sarmentosin	79
<b>Pieridae</b>	<i>Pieris brassicae</i> (Linnaeus, 1758)	Allyl isothiocyanate	251
<b>Zygaenidae</b>	<i>Adscita geryon</i> (Hubner, 1813)	Cyanogens	75
	<i>Zygaena filipendulae</i> (Linnaeus, 1758)	Linamarin, Lotaustralin	75, 78
	<i>Zygaena lavandulae</i> (Esper, 1783)	Lotaustralin	78
	<i>Zygaena lonicerae</i> (Scheven, 1777)	Cyanogens	75
	<i>Zygaena trifolii</i> (Esper, 1783)	Cyanogens	75
<b>Orthoptera</b>			
<b>Pyrgomorphidae</b>	<i>Poekilocerus bufonius</i> (Klug, 1832)	Cardenolides	95
	<i>Poekilocerus pictus</i> (Fabricius, 1775)	Cardenolides	94
<b>CHORDATA</b>			
<b>Petromyzonti</b>			
<b>Petromyzontiformes</b>			
<b>Petromyzontidae</b>	<i>Lethenteron camtschaticum</i> (Tilesius, 1811)	Lamprey toxin	294
<b>Actinopterygii</b>			
<b>Chaetodontiformes</b>			
<b>Chaetodontidae</b>	<i>Chaetodon capistratus</i> Linnaeus, 1758	Palytoxin	259
	<i>Chaetodon sedentarius</i> Poey, 1860	Palytoxin	259
<b>Cyprinodontiformes</b>			
<b>Fundulidae</b>	<i>Fundulus heteroclitus</i> (Linnaeus, 1766)	Dinogunellin	274
<b>Gobiiformes</b>			
<b>Gobiidae</b>	<i>Acanthogobius flavimanus</i> (Temminck & Schlegel, 1845)	Tetrodotoxin	12
	<i>Gillichthys mirabilis</i> Cooper, 1864	Tetrodotoxin	12
<b>Perciformes</b>			
<b>Stichaeidae</b>	<i>Stichaeus grigorjewi</i> Herzenstein, 1890	Dinogunellin	270, 271
	<i>Stichaeus nozawae</i> Jordan & Snyder, 1902	Dinogunellin	274
<b>Sphyraenidae</b>	<i>Sphyraena</i> sp.	Ciguatoxin	246
<b>Scorpaeniformes</b>			
<b>Cottidae</b>	<i>Scorpaenichthys marmoratus</i> (Ayres, 1854)	Dinogunellin	270

Classification	Species <sup>a</sup>	Toxin(s)	Reference <sup>b</sup>
<b>Tetraodontiformes</b>			
<b>Diodontidae</b>	<i>Chylomycteris</i> sp.	Tetrodotoxin	12
	<i>Diodon hystrix</i> Linnaeus, 1758	Tetrodotoxin	12
<b>Tetraodontidae</b>	<i>Arothron hispidus</i> (Linnaeus, 1758)	Tetrodotoxin	12
	<i>Arothron meleagris</i> (Lacepede, 1798)	Tetrodotoxin	12
	<i>Canthigaster rivulata</i> (Temminck & Schlegel, 1850)	Tetrodotoxin	12
	<i>Chelonodon patoca</i> (Hamilton, 1822)	Tetrodotoxin	177
	<i>Chonerhinos naritus</i> (Richardson, 1848)	Saxitoxin, Tetrodotoxin	191
	<i>Lagocephalus sceleratus</i> (Gmelin, 1789)	Tetrodotoxin	12
	<i>Pao leiurus</i> (Bleeker, 1850)	Saxitoxin	192
	<i>Pao suvattii</i> (Sontirat & Soonthornsatit, 1985)	Saxitoxin	192
	<i>Spherooides annulatus</i> (Jenyns, 1842)	Tetrodotoxin	12
	<i>Spherooides maculatus</i> (Bloch & Schneider, 1801)	Tetrodotoxin	12
	<i>Spherooides testudineus</i> (Linnaeus, 1758)	Tetrodotoxin	12
	<i>Takifugu basilevskianus</i> (Basilevsky, 1855)	Tetrodotoxin	12
	<i>Takifugu chrysops</i> (Hilgendorf, 1879)	Tetrodotoxin	12
	<i>Takifugu niphobles</i> (Jordan & Snyder, 1901)	Tetrodotoxin	12
	<i>Takifugu obscurus</i> (Abe, 1949)	Tetrodotoxin	2
	<i>Takifugu ocellatus</i> (Linnaeus, 1758)	Tetrodotoxin	12
	<i>Takifugu pardalis</i> (Temminck & Schlegel, 1850)	Tetrodotoxin	2, 12
	<i>Takifugu poecilonotus</i> (Temminck & Schlegel, 1850)	Tetrodotoxin	12
<i>Takifugu pseudommus</i> (Chu, 1935)	Tetrodotoxin	12	
<i>Takifugu rubripes</i> (Temminck & Schlegel, 1850)	Tetrodotoxin	2, 12	
<i>Takifugu stictionotus</i> (Temminck & Schlegel, 1850)	Tetrodotoxin	12	
<i>Takifugu vermicularis</i> (Temminck & Schlegel, 1850)	Tetrodotoxin	2, 12, 177	
<i>Takifugu xanthopterus</i> (Temminck & Schlegel, 1850)	Tetrodotoxin	12	
<b>Amphibia</b>			
<b>Anura</b>			
<b>Bufo</b>	<i>Anaxyrus americanus</i> (Holbrook, 1836)	Bufadienolides	104
	<i>Anaxyrus fowleri</i> (Hinckley, 1882)	Bufadienolides	104
	<i>Atelopus chiriquiensis</i> Shreve, 1936	Tetrodotoxin	178
	<i>Bufo gargarizans</i> Cantor, 1842	Bufadienolides	105
	<i>Melanophryniscus simplex</i> Caramaschi and Cruz 2002	Pyrrolizidine alkaloids, Pumiliotoxins, Piperidine alkaloids	147
	<i>Rhinella marina</i> (Linnaeus, 1758)	Bufadienolides	41, 103
<b>Dendrobatidae</b>	<i>Oophaga pumilio</i> (Schmidt, 1857)	Alkaloids	161
	<i>Phyllobates terribilis</i> Myers, Daly & Malkin, 1978	Batrachotoxin, Homobatrachotoxin	160
<b>Caudata</b>			
<b>Salamandridae</b>	<i>Cynops pyrrhogaster</i> (Boie, 1826)	Tetrodotoxin	179
	<i>Notophthalmus viridescens</i> (Rafinesque, 1820)	Tetrodotoxin	182
	<i>Paramesotriton hongkongensis</i> (Myers & Leviton, 1962)	Tetrodotoxin	182
	<i>Taricha granulosa</i> (Skilton, 1849)	Tetrodotoxin	182
	<i>Taricha rivularis</i> (Twitty, 1935)	Tetrodotoxin	181
	<i>Taricha torosa</i> (Rathke, 1833)	Tetrodotoxin	180
<b>Lepidosauria</b>			
<b>Squamata</b>			
<b>Colubridae</b>	<i>Rhabdophis tigrinus</i> (Boie, 1826)	Bufadienolides	106

<sup>a</sup> Colors indicate the species' environment; **Black**: land; **Red**: freshwater; **Blue**: marine. <sup>b</sup>Reference numbers refer to article reference list.