Web Table 1. Polyploidy in insects and vertebrates.

Columns: (a) Species (Family) listed alphabetically by order, family, genus, (b) degree of polyploidy, (c) mode of reproduction in polyploid forms, (d) mode of reproduction in closely related diploid forms, (e) reference.

Key to ploidy level: 3*x* = somatic triploidy (etc.); 2*x** = an ancient re-diploidized tetraploid (note that the extent of disomic inheritance is unknown in many species); / = species with multiple ploidy levels; auto = polyploids thought to be autopolyploid; allo = thought to be allopolyploid; mult = thought to have multiple origins; sing = thought to have a single origin**.**

Key to reproductive modes: P = parthenogenesis (automixis or apomixis); P_G = gynogenesis or pseudogamety (fertilization requires stimulation by sperm, which are not incorporated genetically); P_H = hybridogenesis (sperm contribute genetically to the zygote, but the paternal genome is lost sometime during development); D = sexual with dioecy/bisexuality (D_m = male heterogamety, D_f = female heterogamety, D_A = arrhenotoky, D_{TSD} = temperature sex determination); H = hermaphroditism.

Notes: A "?" is placed in entries where a source expressed reservation. Occasional cases are denoted by "(oc)". Reports of a single polyploid individual are denoted by "(one)"; such cases are included because further sampling may reveal more extensive polyploidy. The table excludes somatic polyploidization, tumor-related polyploidization, induced or lab-reared polyploids, and reports of polyploid embryos or larvae. For vertebrates, closely related forms were assumed to be dioecious unless parthenogenetic relatives are known. Also for vertebrates, sex determination is listed only if it is known from members of the same family; if there is within-family variability in sex determination, sex determination is listed only when known for closely related species (15, 36).

Taxon	Ploidy Level	PolyploidRepro.	Related Repro.	References
	INSECTA			
Coleoptera [beetles]				
Ptinus clavipes f. *mobilis* (Ptinidae)	3*x*	P_G	D_m	42, 76
Bromius (Adocus) obscurus (Chrysomelidae)	2*x*/3*x*	P	D_m	42, 76
Altica lazulina (Chrysomelidae)	3*x*	P	D_m	69
Calligrapha spp. (Chrysomelidae)	4*x* (×6)	P	D_m	42
Curculionidae spp. [Weevils]	2*x*/3*x* (×7); 2*x*/3*x*/4*x* (×4); 2*x*/3*x*/5*x*; 2*x*/4*x*; 2*x*/4*x*/5*x*/6*x*; 3*x* (×23); 3*x*/4*x* (×3); 3*x*/5*x*; 4*x* (×7); 4*x*/5*x*; 5*x*; 4*x*/6*x* (sing)	P	D_m, P (oc)	42, 52, 72, 76
Otiorrhynchus scaber	(mult)			64
Aramigus tessellatus				52
Diptera [flies]				
Ochthiphila polystigma (Chamaemyiidae)	3*x*	P	P	42
Limnophyes virgo (Chironomidae)	3*x*	P	P, D	42
Lundstroemia parthenogenetica (Chironomidae)	3*x*	P	D	76
Pseudosmittia sp. (Chironomidae)	3*x*	P	P, D	76
Phytomyza crassiseta (Psychodidae)	2*x*/3*x*	P	P, D_m	10
Psychoda parthenogenetica (Psychodidae)	3*x*	P	D	42
Cnephia mutata (Simuliidae)	2*x*/3*x*	P	D_m	6
Gymonopais sp. (Simuliidae)	3*x*	P	D_m	42
Prosimulium macropyga (Simuliidae)	3*x*	P	D_m	42
Prosimulium ursinum (Simuliidae)	3*x*	P	D_m	42

Embioptera [web-spinners]				
Haploembia sp. (Oligotomidae)	2*x*/3*x*	P	P, D_m	8
Homoptera [scale insects, planthoppers]				
Physokermes hemicryphus (Coccidae)	2*x*/3*x*	P		42
Muellerianella fairmairei (Delphacidae)	3*x*	P_G		42
Hymenoptera [bees, sawflies]				
Diprion simile (Diprionidae)	$4x_{female}/2x_{male}$?	D_A,P	D_A	42
Melipona quinquefasciata (Apidae)	$4x_{female}/2x_{male}$?	D_A	D_A	42
Lepidoptera [moths]				
Solenobia fennicella (Psychidae)	4*x*	P		42
Solenobia lichenella (Psychidae)	2*x*/4*x*	P	D_f	42
Solenobia seileri (Psychidae)	4*x*	P		42
Solenobia triquetrella (Psychidae)	2*x*/4*x* (auto, mult)	P	P, D_f	43
Orthoptera [grasshoppers, cockroaches]				
Pycnoscelus surinamensis (Blaberidae)	2*x*/3*x* (mult)	P	P, D_m	28
Eublaberus distanti (Blaberidae)	3*x*?	D_m?	D_m	18
Saga pedo (Tettigoniidae)	4*x*	P	D_m	42
	VERTEBRATES			
Chordata Two ancient genome duplications have been proposed (but see 68), with the most common proposal placing duplications before (~500MYA) and after (~430MYA) the divergence of jawless fish.	2*x**?			4, 30, 53, 59
	FISH			
Actynopterygii [ray-finned fishes]	2*x**? (150-360 MYA)			4, 78
Acipenseriformes [paddlefish, sturgeons]				
Scaphirynchus platorhynchus (Acipenseridae)	4*x*		D	66
Polyodon spathula (Polyodontidae)	4*x*	D	D	66

Atheriniformes [silversides]				
Menidia sp. (Atherinidae)	2*x*/3*x*(oc)	P	P,D	24
Cypriniformes [suckers, loach, carp, minnows]				
Barbatula barbatula (f. *Noemacheilus barbatulus*) (Balitoridae)	2*x*/3*x*(one)		D	20
Catostomidae	2*x** (~50 MYA)	D	D	66
Botia spp. (Cobitidae)	4*x* (×4)	D	D	62, 81
Cobitis sp. (Cobitidae)	2*x*/3*x*/4*x* (allo)	P_G	D	75
Cobitis biwae (Cobitidae)	2*x*/4*x*		D	66
Misgurnus anguillicaudatus (Cobitidae)	2*x*/3*x*(oc)/4*x*(oc)	D	D	5
Misgurnus fossilis (Cobitidae)	2*x*/4*x*		D	58, 60
Barbodes (*Spinibarbus*) spp. (Cyprinidae)	4*x* (×3)		D	81
Barbus spp. (Cyprinidae) Subgenus *Labeobarbus* is 6n; subgenus *Barbus* is an allotetraploid.	4*x* (×multiple); 6*x*	D	D	17
Acrossocheilus sumatranus (Cyprinidae)	4*x*		D	70
Aulopyge hugelii (Cyprinidae)	4*x*		D	46, 73
Carassius auratus (Cyprinidae) Secondary triploidy and tetraploidy within the tetraploid Cyprininae subfamily.	2*x**/3*x*/4*x* (mult)	P_G	2n*=D_m	66, 67, 81
Cyprininae subfamily (Cyprinidae) Includes *Carassius*, *Carassioides*, *Cyprinus*, *Procypris.*	2*x** (~16 MYA) (allo?)	D_m	D	41, 66, 81
Opsariichthys uncirostris bidens (Cyprinidae)	3*x*		D	46, 81
Phoxinus eos-neogaeus complex (Cyprinidae)	2*x*/3*x* (allo)	P_G, P_H	D	23, 31
Rutilus alburnoides complex (Cyprinidae) Triploid exhibits an unusual form of meiotic hybridogenesis.	2*x*/3*x*/4*x* (allo, mult)	D,P_H	D_f	3
Schizothoracinae subfamily (Cyprinidae) Includes *Diptychus*, *Schizothorax*.	4*x*	D	D	46
Schizothorax spp. (Cyprinidae) Triploids in the 4n Schizothoracinae.	6*x* (×6)	D	D	46
Synocyclocheilus spp. (Cyprinidae)	4*x* (×2)		D	81
Tor spp. (Cyprinidae)	4*x* (×3)		D	34
Zacco platypus (Cyprinidae)	3*x*		D	46, 81

Cyprinodontiformes [livebearers, mollies]				
Poecilia spp. (Poeciliidae)	3*x* (×3) (allo)	P_G	P_G,D	66, 75
Poeciliopsis spp. (Poeciliidae)	3*x* (×3) (allo)	P_G	P_H,D	66
Lepidosireniformes [lungfish]				
Protopterus dolloi (Protopteridae)	4*x*		D	74
Lepisosteiformes [gar]				
Lepisosteus oculatus f. *productus* (Lepisosteidae)	4*x*?		D	66
Perciformes [walleyes]				
Stizostedion vitreum (Percidae)	2*x*/3*x*(oc)		D	25
Salmoniformes [salmon, trout, char]				
Salmonidae. Multivalents still observed in some species; evidence for dominant-Y sex determination	2*x** (auto?) (25-100 MYA)	D_m	D_m	2
Siluriformes [catfish]				
Corydoras, *Aspidoras*, *Brochis* spp. (Callichthyidae) Common ancestor inferred to be polyploid with at least two secondary polyploid events.	Various n	D	D	54, 55
Clarias batrachus (Clariidae)	2*x*/4*x*(oc)		D_f	56
Heteropneustes fossilis (Heteropneustidae)	1*x*/2*x*/3*x*/4*x*	D	D	57
	AMPHIBIANS			
Anura [frogs, toads]				
Bufo sp. D (Bufonidae)	4*x* (allo?)	D_f	D_f	12
Bufo boreas-punctatus hybrids (Bufonidae)	2*x*/3*x* (oc) (allo)		D_f	26
Bufo danatensis (Bufonidae)	4*x* (allo?)	D_f	D_f	12, 47
Bufo viridis (Bufonidae)	2*x*/4*x* (allo, mult)	D_f	D_f	12, 48
Hyla versicolor (Hylidae)	4*x* (<0.5 MYA, auto?, sing)	D	D_m	12, 61
Phyllomedusa tetraploidea (Hylidae) 3*x* hybrids formed with *P. distincta*.	4*x* (auto?)	D	D_m	35
Aphanthophryne (*Cophixalus*) *pansus* (Microhylidae)	4*x*	D	D	40
Chiasmocleis leucosticta (Microhylidae)	4*x*	D	D	37
Ceratophrys dorsata (Leptodactylidae)	8*x* (auto?)	D	D_m	12

Ceratophrys ornata (Leptodactylidae)	2*x*/8*x* (auto?)	D	D_m	12, 65
Eleutherodactylus binotatus (Leptodactylidae)	4*x*?	D	D_m	7
Eupsophus vertebralis (Leptodactylidae)	2*x*/3*x*(one) (auto?)		D_m	27
Leiopelma hochstetteri (Leiopelmatidae)	2*x*/3*x*(one) (auto)		D_f	33
Odontophrynus americanus (Leptodactylidae) *3x* hybrid formed with *O. cultripes*.	2*x*/4*x* (auto?)	D	D_m	12, 63, 65
Pleurodema bibroni (Leptodactylidae)	4*x* (allo?)	D	D_m	12
Pleurodema kriegi (Leptodactylidae)	4*x* (allo?)	D	D_m	12
Neobatrachus sudelli (Myobatrachidae)	4*x*	D	D	45
Neobatrachus sutor (Myobatrachidae)	4*x*	D	D	45
Silurana (f. *Xenopus*) *epitropicalis* (Pipidae)	4*x*	D_f	D_f	16
Xenopus spp. (Pipidae) Common ancestor inferred to be tetraploid with at least two secondary polyploidizations.	2*x** (~30 MYA); 4*x* (×5); 6*x* (×1) (allo?)	D_f	D_f	16, 38
Dicroglossus occipitalis (Ranidae)	2*x*/4*x* (allo?)	D	D	12
Pyxicephalus delalandii (Ranidae)	2*x*/4*x* (allo?)	D	D_f	12
Rana spp. (Ranidae)	2*x*/3*x*(oc) (×2)		D	32, 77
Rana esculenta (Ranidae)	2*x*/3*x* (allo)	P_H	D	12
Caudata [salamanders, newts, sirens]				
Ambystoma spp. (Ambystomidae)	2*x*/3*x*(oc)(×5) (auto, allo?)		D_f	44
Ambystoma laterale-jeffersonianum hybrid complex (Ambystomidae)	2*x*/3*x*/4*x*/5*x* (allo)	P_G, P_H (oc)	D_f	12, 13, 75
Ambystoma laterale-texanum hybrid complex (Ambystomidae)	2*x*/3*x*/4*x* (allo)	P_G	D_f	12
Ambystoma tri-hybrids of *jeffersonianum laterale, texanum* and/or *trigrinum* (Ambystomidae)	3*x*/4*x* (allo)		D_f	75
Triton taeniatus (Salamandridae)	2*x*/3*x*(one)		D_m	14
Sirenidae	2*x**?	D	D	49
	REPTILES			
Squamata [geckos, lizards, snakes]				
Amphibolurus nobbi nobbi (Agamidae)	2*x*/3*x*(one)		D	79

Leiolepis triploida (Agamidae)	3*x*	P	D	12
Gehyra variegata (Gekkonidae)	3*x*	P	D_f	12
Hemidactylus garnotii (Gekkonidae)	3*x*	P	D_f	12, 51
Hemidactylus vietnamensis (Gekkonidae)	3*x*	P	D_f	22
Heteronotia binoei complex (Gekkonidae)	2*x*/3*x* (allo, mult)	P	D_f	50
Lepidodactylus lugubris (Gekkonidae)	2*x*/3*x* (allo?, mult)	P	P, D_f	51
Sceloporus spp. (Iguanidae)	2*x*/3*x* (oc) (×2) (auto?)		D_m	19
Lacerta spp. (Lacertidae)	2*x*/3*x*(oc) (×multiple) (allo,auto)	P,D?	P,D_f	21, 39
Cnemidophorus species (Teiidae)	3*x* (×7); 2*x*/3*x* (×1) (allo)	P	D_m	75
Ramphotyphlops braminus (Typhlopidae)	3*x*? (allo?)	P	D	80
Chelonia [twist-necked turtle]				
Platemys platycephala (Chelidae) Males have diploid testicular tissue regardless of somatic constitution.	2*x*/3*x*/4*x*/mosaics	D_{TSD}?	D	9
	BIRDS			
Galliformes [chicken, quail]				
Gallus domesticus (Phasianidae)	2*x*/3*x*(oc)/4*x*(oc) (auto)		D_f	1, 11
Psittaciformes [blue-and yellow macaw]				
Ara ararauna (Aratingidae)	2*x*/3*x*(one) (auto)		D_f	71
	MAMMALS			
Rodentia [red viscacha rat]				
Tympanoctomys barrerae (Octodontidae)	4*x*	D_m	D_m	29

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