

AMPHIBIANS AND REPTILES: PREDATORS AND PREY

AMPHIBIANS AND BIRDS

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BIBLIOGRAPHY OF HERPETOLOGICAL REFERENCES
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INTRODUCTION

This publication provides a reasonably extensive bibliography of the literature on predator/prey relationships among amphibians and birds. In addition, an index has been prepared that includes four lists which cross reference predator and prey species. This index enables one to quickly find the citations relating to particular amphibians or birds. The lists, which follow this introduction and precede the bibliography, are titled: Birds that Eat Amphibians, Amphibians Eaten by Birds, Amphibians that Eat Birds, and Birds Eaten by Amphibians.

The organisms are listed phylogenetically in the first column of the index. The interacting species and references are listed in the second and third columns alphabetically by the author's name. A "-" in the index indicates the inability to determine the identity of a predator or prey species either due to the unavailability of an article or ambiguity in the article itself.

The importance of a reference to predator/prey studies is three-fold. Birds seem to be a major selective force in the evolution of some amphibians. An awareness of the details of the predator/prey relationship in these cases may help elucidate aspects of amphibian and even avian evolution. Secondly, in order to understand the ecological niche of an animal one needs to be cognizant of its range of food items and its potential enemies. Furthermore, efforts to secure legislation to protect various species must, if possible, be based on sound knowledge, not only of the abundance of these species, but also on their importance to other species.

It is clear that the literature is most voluminous in the reporting of birds feeding on amphibians. 70% of the articles listed fall into this category. Surprisingly perhaps, 7% of the articles discuss cases of amphibians eating birds. Some of the selections deal with studies of mimicry or cryptic coloration in amphibians as defenses against predation by birds (e.g., Brodie, Matthews). The use of poisons as a defense strategy appears in the literature as early as 1892 by Boulenger. Behavioral defenses are reported by at least two authors (e.g., Ewert, Sazima) and the evolution of defense strategies is discussed by Wooley.

Predation by birds is asserted to influence the evolution of community organization among salamanders (Jaeger) as well as the breeding location of frogs (Roca).

Techniques helpful in determining percent biomass in raptor diets (Steenhof) and raptor prey species abundance (Fitzner) are presented and Wendland shows how owl pellets can be used to study frog distribution. Finally, if anyone has ever doubted the commercial value of amphibians, Nair and Prabhu describe how frog wastes can be converted into little cakes to be used for chicken feed.

In the event that it would be desirable to elaborate on this inaugural compilation, I present the sources included thus far. The first few references were obtained from the text *Biology of the Amphibians* by Duellman and Trueb 1986 and from the files of Professor Margaret M. Stewart. Two computer searches covering *Biological Abstracts* from 1975 to 1985 provided several more references. Copies of these articles were obtained and their bibliographies supplied further titles. The majority of the citations were, however, obtained by searching through the *Zoological Record* from 1864 to 1983.

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INDICES

BIRDS THAT EAT AMPHIBIANS

PREDATOR	PREY	REFERENCE
<i>Tachybaptus ruficollis</i>	"tadpole"	Collinge
<i>Podiceps grisegena</i>	"frog"	Collinge
<i>Pelecanus erythrorhynchos</i>	"salamanders"	Sidle
<i>Phalacrocorax carbo</i>	<i>Rana temporaria</i>	Ponting
<i>Phalacrocorax auritus</i>	"frog"	Ponting
<i>Botaurus stellaris</i>	"frog"	Collinge
<i>Ixobrychus minutus</i>	"frog"	Collinge
<i>Ardeola cinerea</i>	"tadpole"	Collinge
	"far-eastern tree frog"	Korotov
<i>Ardeola grayii</i>	<i>Rana tigerina</i> or <i>Bufo melanostictus</i>	Sarker
<i>Bubulcus ibis</i>	<i>Rana tigerina</i> or <i>Bufo melanostictus</i>	Sarker
	-	Siegfried
<i>Ciconia ciconia</i>	<i>Rana</i> sp.	Rékási
<i>Cygnus olor</i>	"frog"	Collinge
<i>Anas platyrhynchos</i>	"frog"	Collinge
	<i>Bufo americanus</i>	Mueller(1980)
<i>Anas acuta</i>	"frog"	Collinge
<i>Anas clypeata</i>	"frog"	Collinge
<i>Anas strepera</i>	"frog"	Collinge
<i>Aythya ferina</i>	"frog"	Collinge
<i>Aythya fuligula</i>	"frog"	Collinge
<i>Mergus albellus</i>	"frog"	Collinge
<i>Milvus migrans</i>	"frog"	Andrews
	<i>Rana tigerina</i> or <i>Bufo melanostictus</i>	Sarker
<i>Haliastur indus</i>	<i>Rana tigerina</i> or <i>Bufo melanostictus</i>	Sarkur
<i>Spilornis cheela</i>	<i>Rana tigerina</i> or <i>Bufo melanostictus</i>	Sarker
<i>Geranospiza caerulescens</i>	<i>Fritziaria goeldii</i> "small vertebrates"	Bokerman Jehl
<i>Circus aeruginosus</i>	<i>Litoria aurea</i>	Baker-Gabb
	"frog"	Collinge
<i>Circus cyaneus</i>	"frog"	Collinge
	<i>Bufo americanus</i>	Miller
<i>Circus pygargus</i>	"frog"	Collinge
<i>Accipiter nisus</i>	"frog"	Collinge
<i>Accipiter cooperii</i>	<i>Bufo americanus</i>	Miller
<i>Buteogallus urubitinga</i>	<i>Bufo marinus</i>	Beebe
	<i>Bufo guttatus</i>	"
<i>Buteo lineatus</i>	<i>Bufo americanus</i>	Miller
<i>Buteo platypterus</i>	<i>Bufo americanus</i>	Miller
	<i>Bufo americanus</i>	Rosenfield
	<i>Rana sylvatica</i>	"
	-	Rusch
<i>Buteo swainsoni</i>	<i>Scaphiopus bombifrons</i>	Sexton

Buteo jamaicensis	Bufo americanus	Miller
Buteo buteo	"frog"	Collinge
	Rana temporaria	Maguire
	Bombina bombina	Zsolt
	Bufo bufo	"
	Bufo viridis	"
	Rana ridibunda	"
Buteo regalis	Rana pipiens	Blair
Aquila rapax	-	Osborne
Falco tinnunculus	"frog"	Collinge
Falco sparverius	Rana aurora	Collopy(1983)
	Hyla regilla	"
Falco vespertinus	Rana arvalis	Pererva
Falco columbarius	Rana temporaria	Rebecca
Falco peregrinus	"frog"	Collinge
	Rana sp.	Lindberg
Falco rusticolus	Rana sp.	Lindberg
Dendragapus canadensis	Rana septentrionalis	Applegate
Bonasa umbellus	Bufo americanus	Hale
	Rana sp.	"
Gallus gallus	Desmognathus ochrophaeus	Brandon(1979)
	Salamandra salamandra	Horter
	Desmognathus spp.	Howard(1971)
	Desmognathus sp.	Howard(1973)
	Plethodon cinereus	"
	Notophthalmus viridescens	"
	Gyrinophilus porphyriticus	"
	Desmognathus ochrophaeus	Labanick
	Plethodon sp.	"
	Bufo americanus	Miller
Gallinula chloropus	"tadpole"	Collinge
Grus canadensis	Amphiuma sp.	Dye
Charadrius vociferus	"frog"	Schardien
Himantopus himantopus	Pleurodeles waltl	Vermot
Tringa totanus	"frog"	Collinge
Tringa nebularia	"frog"	Collinge
	Rana sp.	Taylor
Actitis hypoleucos	"tadpole"	Collinge
Numenius arquata	"frog"	Collinge
Burhinus oedicephalus	"frog"	Collinge
Larus canus	Rana temporaria	Ritchie
Larus argentatus	Rana temporaria	Helle
Chlidonias hybrida	Hyperolius horstockii	Craig
Chlidonias niger	"frog"	Collinge
Cuculus canorus	Bufo bufo	McDougall
	Rana temporaria	"
Geococcyx californianus	-	Parmley
Tyto alba	-	Bowman
	"frog"	Cuisin
	Rana temporaria	Fairley
	Palombes fuscus	Marian
	Rana sp.	"
	-	Muselet

Tyto albo	-	Ruprecht
	-	Valente
Otus asio	Bufo americanus	Miller
	"salamander"	Rising
Bubo virginianus	Ambystoma tigrinum	Holman
Bubo bubo	Rana temporaria	Schaeffer
Athene noctura	"frog"	Collinge
Athene cucularia	Scaphiopus intermontanus	Gleason
	Ambystoma tigrinum	Tyler
	Scaphiopus couchi	"
	Scaphiopus bombifrons	"
	Rana pipiens	"
Strix aluco	-	Betts
	Rana sp.	Bozsko
	"frog"	Collinge
	-	Delmee
	"amphibians"	Nilsson
Strix uralensis	Pelobates fuscus	Wendland
Strix nebulosa	"amphibia spp."	Lundberg
Ceryle alcyon	Rana spp.	Mikkola
Alcedo atthis	Rana sylvatica	Seale
Perisoreus canadensis	"tadpole"	Collinge
	Bufo boreas	Beiswenger
	Pseudacris triseriata	Matthews
	Pseudacris triseriata	Tordoff
Cyanocitta cristata	Desmognathus ochrophaeus	Howard(1973)
Garrulus glandarius	"frog"	Collinge
Corvus monedula	"tadpole", "frog"	Collinge
Corvus frugilegus	"tadpole", "frog"	Collinge
Corvus brachyrhynchos	Bufo americanus	Miller
Corvus corone corone	"tadpole", "frog"	Collinge
Corvus corone cornix	"tadpole", "frog"	Collinge
Corvus corax	"frog"	Collinge
Troglodytes troglodytes	Ranidae	Czikeli
Cinclus cinclus	"tadpole", "frog"	Collinge
Turdus merula	"tadpole"	Collinge
	Rana temporaria	Evans
Turdus migratorius	Plethodon jordani	Brandon(1975)
	Pseudacris triseriata	Matthews
Toxostoma rufum	Desmognathus sp.	Howard(1973)
	Desmognathus sp.	Jaeger
	Plethodon cinereus	"
Lanius excubitor	"frog"	Collinge
	Rana temporaria	Halliday
Pipilo erythrophthalmus	Desmognathus sp.	Jaeger
	Plethodon cinereus	"
Quiscalus quiscula	Rana pipiens	Ernst
Ploceus philippinus	Rana limnocharis	George

AMPHIBIANS EATEN BY BIRDS

PREY	PREDATOR	REFERENCE
Amphiuma sp.	Grus canadensis	Dye
Notophthalmus viridescens	Gallus gallus	Howard
	"ducks"	Pope
Pleurodeles waltl	Himantopus himantopus	Vermot
Salamandra salamandra	"chickens,ducks"	Horter
Ambystoma tigrinum	Bubo virginianus	Holman
	Athene cucularia	Tyler
Desmognathus monticola	Gallus gallus	Howard(1971)
Desmognathus ochrophaeus	Gallus gallus	Brandon(1979)
	"birds"	Brodie(1980)
	Cyanocitta cristata	Howard(1973)
	Gallus gallus	Labanick
Desmognathus quadramaculatus	Gallus gallus	Howard(1971)
Gyrinophilus porphyriticus	Gallus gallus	Howard(1973)
Plethodon cinereus	"birds"	Brodie(1980)
	Pipilo erythrophthalmus	Jaeger
	Toxostoma rufum	"
	-	Tilley
Bombina bombina	Buteo buteo	Zsolt
Xenopus muelleri	"stork"	Loveridge
Pelobates fuscus	Tyto alba	Marion
	Strix aluco	Wendland
Scaphiopus bombifrons	Buteo swainsoni	Sexton
	Athene cucularia	Tyler
Scaphiopus couchi	Athene cucularia	Tyler
Scaphiopus holbrookii	"gulls"	Pearson
Scaphiopus intermontanus	Athene cucularia	Gleason
Bufo americanus	Bonasa umbellus	Hale
	Circus cyaneus	Miller
	Accipiter cooperii	"
	Buteo lineatus	"
	Buteo platypterus	"
	Buteo jamaicensis	"
	Anas platyrhynchos	Mueller(1980)
	Buteo platypterus	Rosenfield
Bufo boreas	Peisoreus canadensis	Beiswenger
Bufo bufo	Falconiformes	Amores
	Strigiformes	"
	Cuculus canorus	McDougall(1981)
	Buteo buteo	Zsolt
Bufo guttatus	Buteogallus urubitinga	Beebe
Bufo marinus	Buteogallus urubitinga	Beebe
Bufo melanostictus	-	Sarker
Bufo viridis	Buteo buteo	Zsolt
Brachycephalus ephippium	-	Carvalho
Litoria aurea	Circus aeruginosus	Baker-Gabb
Fritziana goeldii	Geranospiza caerulescens	Bokerman
Acris crepitans	-	Nevo
Acris gryllus	-	Nevo
Hyla regilla	Falco sparverius	Collopy(1983)
Pseudacris triseriata	Perisoreus canadensis	Matthews

	Turdus migratorius	
	Perisoreus canadensis	Tordoff
Rana arvalis	Falco vespertinus	Pererva
Rana aurora	Falco sparverius	Collopy
Rana limnocharis	Ploceus philippinus	George
Rana pipiens	Buteo regalis	Blair
	Quiscalus quiscula	Ernst
	Athene cunicularia	Tyler
Rana ridibunda	Buteo buteo	Zsolt
Rana septentrionalis	Dendragapus canadensis	Applegate
Rana sylvatica	Buteo platypterus	Rosenfield
	Ceryle alcyon	Seale
Rana temporaria	Turdus merula	Evans
	Tyto alba	Fairley
	Lanius excubitor	Halliday
	Larus argentatus	Helle
	Buteo buteo	Maguire
	Cuculus canorus	McDougall(1981)
	Phalacrocorax carbo	Ponting
	Falco columbarius	Rebecca
	Larus canus	Ritchie
	Bubo bubo	Schaeffer
	-	Schiebe
Rana tigerina	-	Sarker
Hyperolius horstockii	Chlidonias hybrida	Craig

AMPHIBIANS THAT EAT BIRDS

PREDATOR	PREY	REFERENCE
Bufo americanus	Agelaius phoeniceus	Cook
Bufo marinus	"ducklings"	Cook
Pyxicephalus adspersus	Gallus gallus	Branch
	"small birds"	Wager
Rana catesbeiana	"probably" Passer domesticus	Cochran
	-	Frost
	Bombycilla cedrorum	Gollob
	"ducklings"	Hewett
	-	Howard,W.
Rana esculenta	Regulus regulus	Rabøl
Rana pipiens	Archilochus colubris	Norris-Elye
	Dendroica petechia	"
Rana ridibunda	Phylloscopus bonelli	Belman
	Motacilla flava	"
	"small birds"	Hellmich
Rana temporaria	Phylloscopus trochilus	Svensson
Rana tigerina	"sparrow"	Deshpande
	Gallus gallus	Dharmaraju

BIRDS EATEN BY AMPHIBIANS

PREY	PREDATOR	REFERENCE
Gallus gallus	Pyxicephalus adspersus	Branch
Archilochus colubris	Rana tigerina	Dharmaraju
Phylloscopus trochilus	Rana pipiens	Norris-Elye
Phylloscopus bonelli	Rana temporaria	Svensson
Regulus regulus	Rana ridibunda	Belman
Motacilla flava	Rana esculenta	Rabøl
Bombycilla cedrorum	Rana ridibunda	Belman
Dendroica petechia	Rana catesbeiana	Gollob
Agelaius phoeniceus	Rana pipiens	Norris-Elye
	Bufo americanus	Cook

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