

THE BIOLOGY AND MANAGEMENT OF WILD RUMINANTS

CHAPTER FIVE

INTERACTIONS WITHIN AND BETWEEN SPECIES

by

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## CHAPTER 5. INTERACTIONS WITHIN AND BETWEEN SPECIES

Interactions within and between species occur constantly, except when an individual animal is alone. Interactions may be divided into two main categories: those occurring within a species, or intraspecies interactions, and those occurring between species, or interspecies interactions. Intraspecies interactions may be "positive" or "negative." For example, the social ties between a female and her offspring are strong and beneficial (positive) in the summer and fall, yet in a competitive winter situation when food is scarce, the female may be agonistic (negative) in relation to her own offspring. Interspecies interactions may be "positive", "neutral" or "negative." For example, members of some of the different species do not develop social ties or associate together in ways that enhance survival and productivity (neutral), while members of some species have a direct effect, such as predators which kill their prey (negative).

Predation is one of the most easily-recognized negative interspecies interactions because it is dramatic and direct. Competition between herbivores is not as easily recognized but potentially important negative interspecies interaction on some ranges. Competition may be reduced by predation, however; an apparently negative interaction between species, such as predator and prey, may be positive with respect to their populations by reducing competition. Predation is, ecologically, good for a population and its range, but "bad" for the individual.

The relationships of pathogens and parasites to their hosts are two more kinds of intespecies relationships; they may have little effect (neutral) or pronounced effects (negative) on the hosts, depending on the action of the pathogen and parasite and on the condition of their hosts.

Social interactions are very difficult to quantify because there are no standard units with which to express the amounts of interactions. Social hierarchies result in high levels of organization within groups, but they are difficult to detect by casual observation. Continued study over a period of time is necessary.

This CHAPTER 5 is directed toward behavioral interactions within and between species. The first two TOPICS are directed toward interactions within a species, and the third TOPIC toward interactions between species. The material in TOPIC 3 is discussed further in PARTS VI and VII where the effects on populations and management are discussed.

## REFERENCES, CHAPTER 5

## INTERACTIONS WITHIN AND BETWEEN SPECIES

## BOOKS

TYPE	PUBL	CITY PGES	ANIM KEY WORDS-----	AUTHORS/EDITORS--	YEAR
aubo	dodo	nyny 1220	---- v 3, lives of game animals	seton,et	1929
aubo	meth	loen 150	---- social behavior in animals	tinbergen,n	1953
aubo	uchp	chil 281	---- animal behavior	scott,jp	1958
aubo	prha	ecnj 171	---- behavio aspects of ecology	klopfer,ph	1962
aubo	olbo	edsc 653	---- animal dispersion, soc beh	wynne-edwards,vc	1962
edbo	jwis	nyny 349	---- maternal care in mammals	rheingold,lh,ed	1963
edbo	acpr	nyny 159	---- natural hist of aggression	carthy,jd; ebling	1964
edbo	uchp	chil 307	---- soc behav, organiza, verte	etkin,w	1964
aubo	meth	loen 150	---- soci behav, animals, verte	tinbergen,n	1965
aubo	macm	nyny 118	---- integral animal behavior	davis,d	1966
aubo	wile	nyny 432	---- pattern, animal communitie	elton,cs	1966
aubo	mhbc	nyny 534	---- anim behav: ethol, com psy	hinde,ra	1966
aubo	jwis	nyny 771	---- mechanisms of animal behav	marler,p; hamilton	1966
aubo	isup	amia 277	---- of predation and life	errington,pl	1967
aubo	prha	ecnj 297	---- introdu to animal behavior	klopfer,ph; haiman	1967
edbo	saco	phpa 563	---- abnormal behavior in anima	fox,mw	1968
aubo	dove	nyny 166	---- pschol, behav, zoos,circus	hediger,h	1968
edbo	nags	wadc 422	---- marvels of animal behavior	allen,tb	1972
aubo	uchp	chil 349	---- animal behavior	scott,jp	1972
aubo	whfr	sfca 458	---- wildlife ecology	moen,an	1973
edbo	dohr	stpa 362	---- hormones and sexual behavr	carter,cs	1974
edbo	dohr	stpa 401	---- social hierarch, dominance	schein,mw	1975
aubo	bhup	cama 697	---- sociobiol, the new synthes	wilson,eo	1975
edbo	acpr	nyny 344	---- mamm olfact, reprod, behav	doty,rl	1976
edbo	wiwi	bama 532	---- behavr of domestic animals	hafez,ese	1976
edbo	dohr	stpa 411	---- vertebr social organizatn	banks,em	1977
edbo	plpc	nyny 609	---- chemical signals, vertebra	muller-schwarze,/	1977
edbo	jwis	nyny 364	---- quantitative ethology	colgon,pw	1978
aubo	mhbc	nyny 452	---- comparative anim behavior	devisbury,da	1978
edbo	plpr	nyny 183	---- aggress, domnce,indv spcng	krames,l/	1978
edbo	wiso	wadc 206	---- animal behavior	teague,rd,ed; moe	1979
aubo	fost	nyny 426	cerv antelope, deer, north amer	caton,jd	1877
edbo	stac	hapa 668	od-- deer of north america	taylor,wp	1956
aubo	ucap	beca 567	odhe a herd of mule deer	linsdale,jm; tomi	1953
edbo	unbp	line 605	odhe mule, black-tailed, no ame	wallmo,oc	1981
aubo	oxup	loen 215	ceel herd, red dee, stud, behav	darling,ff	1937
aubo	cite	oxen 74	ceel ecology of red deer	mitchell,b; stai/	1977
edbo	wimi	wadc ....	ceel ecology,mngmnt, n amer elk	thomas,jw; towie in pr	
aubo	uwyp	lawy 294	ceel n amer elk: ecol,behav,mgt	boyce,ms; hayden-	1979
aubo	utop	toon 280	alal north american moose	peterson,rl	1955

TYPE	PUBL	CITY	PGES	ANIM	KEY WORDS-----	AUTHORS	EDITORS--	YEAR
aubo	stac	hapa	238	anam prnghrn antlp & its mngmnt	einarsen,as			1948
aubo	aakn	nyny	339	bibi the time of the buffalo	mchugh,t			1972
aubo	uopr	nook	247	ov-- the great ark of the wild	clark,jl			1964
aubo	uchp	chil	383	ovca mount sheep: behavr, evolu	geist,v			1971
aubo	qupr	oton	166	obmo muskoxen,biol,taxon,canada	tener,js			1965
edbo	iucn	mosw	940	many behav, its relatn to mgmnt	geist,v; walther,			1974
edbo	stac	hapa	494	many big game, n amer, ecol,mgt	schmidt,jl; gilbe			1978
aubo	acpr	nyny	202	ungu reproductive behav, ungula	fraser,af			1968
edbo	blsp	oxen	652	ungl p 413-424,man comm for con	duffey,e; watt,as			1971

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CODEN VO-NU BEPA ENPA ANIM KEY WORDS-----				AUTHORS-----	YEAR		
ZOBEA	12--2	219	250	cerv ethologi obsrvatns, n amer	geist,v		1966

CODEN VO-NU BEPA ENPA ANIM KEY WORDS-----				AUTHORS-----	YEAR		
MDCBA	5----	1	64	odvi w-tailed deer of minnesota	erickson,ab; gunv		1961
MDCRA	14---	1	80	odvi michigan white-tailed deer	jenkins,dh; bartl		1959
RWLBA	6---2	153	325	odvi w-t deer of the adirondcks	townsend,mt; smit		933
RWLBA	6---2	327	385	odvi wntr, spr obsrv, adirndcks	spiker,cj		1933
WCDBA	14---	1	282	odvi white-tailed deer, wiscons	dahlberg,bl; guet		1956

CODEN VO-NU BEPA ENPA ANIM KEY WORDS-----				AUTHORS-----	YEAR		
AZWBA	3----	1	109	odhe in arizona chaparral	swank,wg		1958
CAFGA	26--2	139	166	odhe calif deer, rcky mt mule d	mclean,dd		1940
CFGGA	8----	1	163	odhe life hist, managemt, calif	taber,rd; dasmann		1958
CGFPA	4----	1	39	odhe lit review, movmnts,captur	siglin,rj		1965
CGFPA	7----	1	26	odhe literature review on behav	dorrance,mj		1967
JOMAA	37--2	143	164	odhe behavior, populatn ecology	dasmann,rf; taber		1956

CODEN VO-NU BEPA ENPA ANIM KEY WORDS-----				AUTHORS-----	YEAR
UCPZA	88--- 1	209	ceel tule elk: hist, behav, eco	mccullough,dr	1969
WLMOA	16--- 1	49	ceel status, ecol, roosevel	elk harper,ja; harn/	1967
WLMOA	24--- 1	66	ceel the sun river	elk herd knight,rr	1970

CODEN VO-NU BEPA ENPA ANIM KEY WORDS-----				AUTHORS-----	YEAR
AMNAA	52--2 392	399	alal observ in yellowstone park	mcmillan,jf	1954
BEHAA	20--3 377	416	alal behavi in british columbia	geist,v	1963
FUNAA	8.... 40	43	alal moose habits and habitat	rush,wm	1946
JOMAA	39--1 128	139	alal summrvs obsrvtns, behv,	ontar de vos,a	1958
MUZBA	25---- 1	44	alal the moose of isle royale	murie,a	1934
NCANA	101-- 1	436	alal ecol, proc inter sym, pt 1	bedard,j	1974
NCANA	101-- 437	735	alal ecol, proc inter sym, pt 2	bedard,j	1974
VLUBB	22-15 74	82	alal [elk behav, leningr, russ]	timofeeva,ek	1967
ZOOLA	41-14 105	118	alal ecol behav popula dynamics	denniston,rh	1956

CODEN VO-NU BEPA ENPA ANIM KEY WORDS-----				AUTHORS-----	YEAR
BPURD	2---- 1	215	rata ecol, caribou, prudhoe bay	white,rg; thomso/	1975
CWRSB	38---- 1	71	rata biology, kaminuriak	popula dauphine,tc,jr	1976
UABPA	3---- 1	44	rata behav of barren-ground car	pruitt,wo	1960
UABPA	8---- 1	82	rata ecology, managment, sweden	skunke,f	1969
WMBAA	10A-- 1	79	rata prelim investigation, pt 1	banfield,awf	1954
WMBAA	10B-- 1	112	rata prelim investigation, pt 2	banfield,awf	1954
WMBAA	12--- 1	148	rata caribou, continued studies	kelsall,jp	1957
WMBAA	15---- 1	145	rata barrn gr carib, coop study	kelsall,jp	1960

CODEN VO-NU BEPA ENPA ANIM KEY WORDS-----				AUTHORS-----	YEAR	
AMNAA	43--2	257	354	anam life hist,ecol,rng use,tex	buechner,hk	1947
CAFGA	30--4	221	241	anam prong-hornd antlp in calif	mclean,dd	1944
CGFPA	3----	1	28	anam litera revi on prong behav	prenzlow,ej	1965
CGFPA	17----	1	16	anam some behav patterns of the	prenzlow,ej; gil/	1968
JOMAA	3----	82	105	anam the prong-horn	skinner,mp	1922

CODEN VO-NU BEPA ENPA ANIM KEY WORDS-----				AUTHORS-----	YEAR	
NPSMD	161--	1	161	bibi bison, yellowston nat park	meagher,mm	1973

CODEN VO-NU BEPA ENPA ANIM KEY WORDS-----				AUTHORS-----	YEAR	
AMNAA	24--3	505	580	ov-- distribut, variat, no amer	cowan,imct	1940
AZWBA	1----	1	153	ov-- desert bighorn	russo,jp	1956
WLMOA	4----	1	174	ov-- united sta, past to future	buechner,hk	1960

CODEN VO-NU BEPA ENPA ANIM KEY WORDS-----				AUTHORS-----	YEAR	
AMNAA	56--2	297	324	ovca ecology of mountain sheep	mccann,lj	1956
CAFNA	77--2	77	94	ovca behavior of a bighorn herd	blood,da	1963
CJZOA	46--5	899	904	ovca ovda,delay soc, phys matur	geist,v	1968
IGWBA	1----	1	154	ovca stat, life hist, mgt, idah	smith,dr	1954
JOMAA	18--2	205	212	ovca prelim study, yllwstn n pk mills,hb		1937
JOMAA	20--4	440	455	ovca bighorn sheep of texas	davis,wb; taylor,	1939
JOMAA	24--1	1	11	ovca notes on life histor, colo	spencer,cc	1943
SCBUB	35--6	29	76	ovca survey, sierra nevada bigh	jones,f1	1950
WGFBA	1----	1	127	ovca wyoming bighorn study	honess,rf; frost,	1942
WLMOA	4----	1	174	ovca bighorn sheep in the u s	buechner,hk	1960
XNFSA	6----	1	242	ovca bighorn of death valley	welles,re; welles	1961

CODEN VO-NU BEPA ENPA ANIM KEY WORDS----- AUTHORS----- YEAR  
XNFSA 5---- 1 238 ovda the wolves of mt mckinley murie,a 1944

CODEN VO-NU BEPA ENPA ANIM KEY WORDS----- AUTHORS----- YEAR  
WMBAA 9---- 1 34 obmo prelim stud,ellesmr is,nwt tener,js 1954

CODEN VO-NU BEPA ENPA ANIM KEY WORDS----- AUTHORS----- YEAR  
CAFNA 81--1 1 22 oram obsrvtns,kootenay nt pk,bc holroyd,jc 1967  
CGFPA 8---- 1 23 oram literature review, ecology hibbs,ld 1966  
IGWBA 2---- 1 142 oram life history, mgtmt, idaho brandborg,sm 1955

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SCZFA 113-- 660 668 caca [obs behav roe dee; germa] eiberle,k 1962  
ZEJAA 8---2 61 81 caca behavior of roe bucks hennig,r 1962

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MRLTA 41--3 34 40 dogo feral goats, british colum geist,v 1960

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PZSLA 142-1 129 163 dosh study, feral pop, st kilda boyd,m; doney,jm/ 1964

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QRBLIA 22--- 283 314 ---- life tabls, natrl pop anim deevey,es 1947

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