

TOPIC 1. PARASITES, DISEASES, AND ABNORMALITIES

Parasites, diseases and abnormalities are an extensive array of factors that affect the physiology and metabolism of wild ruminants. They are also a normal part of life; parasites and diseases are expected to be present, and the responses necessary to cope with their effects serve to strengthen the species' ability to withstand future impacts. It must be assumed that a natural balance exists between parasite and host, with short-term fluctuations in favor of one or the other.

The impacts of parasites and diseases may be greatest when a ruminant species is moved into suitable but unoccupied areas. Then, the additional stresses due to the moving plus the possibility of encounters with new parasites and disease may make the transplants more susceptible. Generations may build up a resistance to the effects, resulting in increased productivity in later years.

It is conceivable that a species could be moved into a new area and experience less environmental resistance, including lesser effects of parasites and diseases, than in the previous range. Initial productivity may be higher than normal in the previous range for a time. An initially high rate of productivity may be followed by depressed productivity as factors affecting physiology and metabolism begin to take effect.

The effects of parasites and diseases tend to increase and decrease through the year and over the years. Abnormalities are more of an either-or effector; either an animal is abnormal or it isn't. The degree to which the abnormality affects physiological functions may vary, of course, resulting in a gradient-type effect on the animals productivity.

There are rich opportunities for exploring the effects of parasites, diseases, and abnormalities on ecological productivity, but the rich opportunities are also very challenging. The effects are hard to measure because productivity is hard to measure. The results of different levels of effects, providing they can be quantified, are often not available for two or more years when working with large animals such as wild ruminants because of the time needed to reach reproductive maturity. Nevertheless, the opportunities exist, and it is my hope that the organized reference lists in the units that follow will make study and work in these areas not only more efficient but also more appealing.

REFERENCES, TOPIC 1

PARASITES, DISEASES, AND ABNORMALITIES

BOOKS

TYPE	PUBL	CITY	PGES	ANIM	KEY WORDS-----	AUTHORS/EDITORS--	YEAR
aubo	faog	roit	119	anim	diseases free-liv wild ani	mcdiarmid,a	1962
edbo	ccth	spil	967	anim	diseases trans anim to man	hull,tg, ed	1963
aubo	hein	loen	136		ecology of parasites	croll,na	1966
aubo	wbsc	phpa	462		veterinary clinical pathol	coles,eh	1980
edbo	acpr	nyny	332	anim	diseases free-liv wild ani	mcdiarmid,a,ed	1969
aubo	isup	amia	421	mamm	infectious dise, wild mamm	davis,jw; karsta/	1970
edbo	isup	amia	364	mamm	parasitic disea, wild mamm	davis,jw; anders/	1971
aubo	lefe	phpa	1521	anim	veterinary pathology,4th e	smith,ha; jones,	1972
edbo	plpr	nyny	686	many	wildlife diseases	page,la	1976

OTHER PUBLICATIONS

Fyvie, A. 1969. Manual of Common Parasites, Diseases and Anomalies of Wildlife in Ontario, 2nd ed. Dept. of Lands and Forests, Ontario. 102 p.

McDiarmid, A. 1960. Diseases of Free-Living Wild Animals. Animal Health Monograph #1, FAO Working Document. FAO, Rome. 91 p.

Reed, D. and H. Shane. 1976. Deer Diseases in South Dakota, 1972-76. Department of Game, Fish and Parks, Pierre, S. D. 32 p. [parasites and diseases, odvi, odhe]

Worley, D. E. and K. R. Greer. 1976. Parasites and Diseases of North American Elk (*Cervus spp.*) - An annotated bibliography. 52 p. Montana Dept. of Fish and Game in Cooperation with Montana Agricultural Experiment Station, Montana State Univ., Bozeman, Montana.

UNIT 1.1: PARASITES

Parasites inhabit wild ruminants, living off the ruminant host as the ruminant lives off the range. The effects may not be limited to resource use, however (anemia, for example, in the case of a blood-sucking parasite) but may also include effects on behavior as well as physiology. "Moose sickness" is such a case; moose infected with Pneumostongylus tenuis exhibit aberrant behavior as a result of the effects of the parasite in the central nervous system. It is interesting to note that this parasite may be resident in white-tailed deer without the effects observed in moose. The prevalence of white-tailed deer carrying the parasite is great enough to cause problems in moose populations when their habitats overlap.

The larval stages of parasites often do more harm than the adult stages. Further, the different stages in the life cycles of different parasites result in different levels of susceptibility under different habitat conditions. Range conditions, both vegetative and physical, may be very important factors affecting levels of parasite infections. This is well-known in the treatment of domestic livestock; the development of clinical parasitism depends not only upon the number and activity of the parasites, but also on the age, resistance, and nutritional status of the host, climatic conditions and management practices (Siegmund 1967: 699-700). Putting it another way, range conditions, weather conditions, and the age, resistance and nutritional status of wild ruminants affect the number and the effects of parasites on their hosts.

One example of differences in the abilities of individual animals to withstand parasites and in the ecological effects of different parasites on host populations is given by researchers on domestic sheep. Georgi and Whitlock (1967) established a direct cause and effect relationship between exposure of sheep to infection by Haemonchus contortus (twisted stomach worm), a helminth parasite of ruminants usually found in the abomasum, and the onset of erythrocyte loss. The number of erythrocytes is important in determining the efficiency of the oxygen transport system, which is fundamental to efficient tissue metabolism. Georgi (1964) clearly shows that the rate of iron loss from sheep infected with H. contortus was greater than that from non-infected sheep. Evans and Whitlock (1964) concluded that, other things being equal, an animal (sheep) with a low erythrocyte volume has a smaller chance of surviving a natural challenge with this parasite than an animal having a greater erythrocyte volume. Such experimental evidence in sheep indicates that responses to parasites by the host are important determinants of metabolic efficiencies.

Basic research on the reactions of wild ruminants to pathogens and parasites should be made along with studies on apparently healthy animals in order to evaluate the ecological importance of these interactions. Such research is especially difficult on wild ruminants because the results of such research are not necessarily important at clinical levels established for domestic animals, but could be rather important, in relation to ecological metabolism and its relation to productivity. These relationships are not only hard to evaluate; they are hard to identify. Van Volkenburg and Nicholson (1943) found 11 specific parasites in the nasal passages, skin, abomasum, and small intestines of dead deer in the Edwards Plateau, Texas. They concluded that parasites were unimportant among deer on ranges with sufficient food but made no efforts to quantify metabolic relationships between host and parasite.

The next several pages contain lists of references with information on parasites in relation to the different species of wild ruminants. The lists should prove to be convenient when reviewing this area of the biology of wild ruminants.

LITERATURE CITED

- Evans, J. V., and J. H. Whitlock. 1964. Genetic relationship between maximum hematocrit values and hemoglobin type in sheep. Science 145(3638):1318.
- Georgi, J. R. 1964. Estimation of parasitic blood loss by whole body counting. Amer. Jour. Ver. Res. 25(104):246-250.
- Georgi, J. R., and J. H. Whitlock. 1967. Erythrocyte loss and restitution in ovine haemonchosis. Estimation of erythrocyte loss in lambs following natural exposure. Cornell Vet. 57(1):43-53.
- Siegmund, O. H., Ed. 1967. The Merck Veterinary Manual. Merck and Co., Inc. Rahway, N. J. 1686 pp.
- Van Volkenburg, H. L., and A. J. Nicholson. 1943. Parasitism and mal-nutrition of deer in Texas. J. Wildl. Manage. 7(2):220-223.

REFERENCES, UNIT 1.1

PARASITES

SERIALS

CODEN	VO-NU BEPA ENPA ANIM KEY WORDS-----	AUTHORS-----	YEAR
APRPA 13-44 445	481 cerv helminths, helminthiases drozdz,j		1965
APRPA 14--1 1	13 cerv helminth fauna in poland drozdz,j		1966
APRPA 21-34 475	479 cerv trichostr nematode, mongol drozdz,j; namzyl,g		1973
CJZOA 44--5 851	861 cerv exper stud, pneumostrongyl anderson,rc; mur/		1966
JOPAA 13--1 25	28 cerv nematod, stomach, cervidae schwartz,b		1926
JOPAA 39--2 119	134 cerv fluke in america ruminants price,ew		1953
JOPAA 59--3 569	578 cerv haemaphysalis magesh, japn saito,y; hoogstra		1973
NAWTA 30-- 156	167 cerv cerebrospinal nematodiasis anderson,rc		1965
PPPAA 6---4 439	458 cerv ecology of dermacentor alb howell,de		1939
WDABB 8---4 304	310 cerv ecol relation, mening worm anderson,rc		1972
ZOANA 110-- 202	208 cerv nematodes, n amer ruminant wehr,ee; dikmans/		1935

CODEN	VO-NU BEPA ENPA ANIM KEY WORDS-----	AUTHORS-----	YEAR
AZATA 75--- 1	39 od-- experiment feeding of deer nichol,aa		1938
AJVRA 2---3 199	201 od-- new record, nematod, calif annereaux,rf		1941
AJVRA 23--1 21	23 od-- doca, transm anaplas, tick osebold,jw; doug/		1962

od-- continued on the next page

CODEN VO-NU BEPA ENPA ANIM KEY WORDS-----				AUTHORS-----	YEAR
CAFGA 15--4 309	315	od-- parasitism in deer		vanroekel,h	1929
CAFGA 30--1 58	59	od-- eye worm infection, califo	herman,cm		1944
CAFGA 31--4 201	208	od-- some worm parasites, calif	herman,cm		1945
CAFGA 32--1 17	18	od-- the nose bot fly of deer	herman,cm		1946
CAFGA 32--4 182	189	od-- foot worm parasite, califo	herman,cm; bischo		1946
CAFGA 33--1 54	54	od-- deer foot worm infect, cal	herman,cm		1947
CAFGA 51--3 208	210	od-- tick paralysis, california	brunetti,oa		1965
CAFGA 55--4 307	316	od-- parelaphostrongylus, calif	brunetti,oa		1969
CNVJA 3---3 71	78	od-- cul, ser evi, lept	ontar abdulla,pk; kars/		1961
COVEA 40--3 315	323	od-- experim transmis, lungworm	o'roke,ec; cheatu		1950
FPARA 20--1 41	48	od-- yearly cycle, helminthoses	erhardova-kotrla/		1973
CODEN VO-NU BEPA ENPA ANIM KEY WORDS-----				AUTHORS-----	YEAR
JFUSA 40--8 540	543	od-- foot-wor dis, n	rocky mt r denio,rm; west,rm		1942
JOPAA 19--3 246	246	od-- onchocerca, subcut abscess	dikmans,g		1933
JOPAA 29--1 80	80	od-- corynebacterium, louse fly	steinhaus,ea		1943
JOPAA 55--4 720	725	od-- dist, menigi worm, se u s	prestwood,ak; smi		1969
JWIDA 8---2 109	111	od-- devic, aid exam brain, men	smith,jf		1972
JWIDA 8---2 163	164	od-- devic, aid exam sm intesti	doster,gl		1972
JWIDA 10--3 225	227	od-- trans echinoc gran, coyote	romano,mn; brune/		1974
JWMAA 7---2 220	223	od-- parasitism, malnutrit, tex	van volkenberg,h/		1943
JWMAA 30--1 202	203	od-- deer, cattle fever ticks	park,rl; skov,o;/		1966
JWMAA 31--3 595	597	od-- endoparasites, welder refu	glazener,wc; know		1967
NAWTA 3---- 882	885	od-- deer, fever tick erad, flo	shillinger,je		1938
NAWTA 10--- 242	246	od-- dee, domes livest par, dis	herman,cm		1945
NAWTA 16--- 135	143	od-- effec, screw-worm, southea	allen,gw		1951
NYCOA 8---3 32	32	od-- deer fly, mechan dee repel	lee,j		1953
PARAA 36--- 199	208	od-- nematod lungworms, no amer	dougherty,ec		1945
PCGFA 8---- 1	19	od-- screw-worm problem, florid	strode,dd		1954
PMASA 18--- 33	33	od-- ecto, endoparasites, monta	senger,cm		1958
PPASA 39--2 73	77	od-- id nemato eggs, larv, penn	samuel,wm; beaudo		1965
WDABB 1---4 44	48	od-- microfilar, wehrdikm, ariz	hibler,cp		1965
WDABB 5---1 27	30	od-- elaeophorosis, new mexico	hibler,cp; adcoc/		1969
WIDIA 10--- 1	5	od-- the foot worm, northe utah	yuill,tm; low,jb/		1961

CODEN VO-NU BEPA ENPA ANIM KEY WORDS-----				AUTHORS-----	YEAR
AESAA	62--5	1208	1210	odvi pharyngeal bot in oklahoma hair,ja; howell,/	1969
AJVRA	31--5	879	883	odvi antigen, serodiag, theiler gadir,fa; hidalg/	1970
AJVRA	39-12	1901	1903	odvi anthelmint activ, albendaz foreyt,wj; drawe,	1978
AMNAA	79--2	528	530	odvi rate, tick attachmen, fawn montgomery,gg	1968
AMNAA	85--2	507	513	odvi seas fluc tricholipeur,tex samuel,wm; traine	1971
AMNAA	86--2	506	508	odvi new sp. trichostrongylus maples,wp; englan	1971
APRPA	19-11	141	145	odvi 2 nematode species, poland drozdz,j	1971
CJCMA	33--4	280	286	odvi eff pneumostrongyl on kids anderson,rc; stre	1969
CJCMA	38--3	271	279	odvi path chang, fasciola infec presidente,pja; /	1974
CJCMA	39--2	155	165	odvi exp fasciola-hepati infect presidente,pja; /	1975
CJCMA	39--2	166	177	odvi fasciola infec, path featu presidente,pja; /	1975
CJZOA	34--3	167	173	odvi elaphostrongyl, cranial ca anderson,rc	1956
CJZOA	41--5	755	792	odvi inci, dev, tr, pneumostron anderson,rc	1963
CJZOA	45--3	285	289	odvi penetrat, pneumostrongylus anderson,rc; stre	1967
CJZOA	46--3	373	383	odvi gastropods, pneumostrogylu lankester,mw; and	1968
CJZOA	47--6	1411	1411	odvi host recor, nematodirus sp webster,wa; macka	1969
CJZOA	52--6	785	789	odvi demodex odocoilei, new spp desch,ce; nutting	1974
CJZOA	53--1	87	96	odvi seas cha, aboma worms, ont baker,mr; anderso	1975
CJZOA	53--8	1047	1054	odvi seas change, louse populat watson,tg; anders	1975
CNJMA	31-12	354	357	odvi antibodies, theileria infe kutler,k1; robin/	1967
CNVJA	5--11	287	296	odvi elaphostrongylosis, moose, smith,hj; archib/	1964
COVEA	40--2	211	212	odvi new host, dicrocoelium, ny mapes,cr; baker,d	1950
COVEA	51--3	431	441	odvi cerebra nematodiasis, penn alibasoglu,m; kr/	1961
COVEA	68--2	139	149	odvi demodex canis, redescripti nutting,wb; desch	1978
DABBB	34B--	5002	5002	odvi lone star tick, fawn survi hoch,al	1974
DABBB	35B-6	3114	3114	odvi survey helminth parasites owen,wb,jr	1974
DABBB	36B-8	3806	3807	odvi epizoot larg amer liver fl foreyt.wj	1976
EVETB	6---2	263	269	odvi seas abund, lonestar ticks patrick,cd; hair,	1977
GRLEA	8---1	1	29	odvi the deer flies of indiana burton,jjs	1975
JAVMA	96---	607	608	odvi tropic var cattle-fev tick knapp,jv	1940
JAVMA	163-6	556	561	odvi abomas helmin, tex,virg is prestwood,ak; ha/	1973
JAVMA	166-8	787	789	odvi helmin w-t deer, cattle, s prestwood,ak; ke/	1975
JAVMA	169-9	896	900	odvi intest nema, w-t deer, s e purseglove,sr; pr/	1976
JAVMA	171-9	933	935	odvi prev, distr, setaria se us prestwood,ak; pur	1977
JAVMA	171-9	936	938	odvi fascioloides infect, se us purseglove,sr; p/	1977
JAVMA	173-9	1242	1243	odvi otitis media caused by pso rollor,ea: nettl/	1978

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CODEN VO-NU BEPA ENPA ANIM KEY WORDS-----				AUTHORS-----	YEAR
JMENA 7---5 567	574	odvi	amblyomma, s	texas, theile samuel,wm; traine	1970
JMENA 8---5 495	498	odvi	arthropod parasites,	w-t d kellogg,fe; kist/	1971
JMENA 9---1 104	106	odvi	lipoptena mazamae	dip, tex samuel,wm; traine	1972
JNYEA 85--4 217	220	odvi	epizo, bovin babesias,	tex hourrigan,jl	1977
JOMAA 16--1 70	71	odvi	onchocerciasis,	montana rush,wm	1935
JOPAA 29--2 158	158	odvi	protostrongylus, lungs,	ny goble,fc	1943
JOPAA 45--4 32	32	odvi	odhe louse-flies,	w montan senger,cm; capell	1959
JOPAA 53--4 691	691	odvi	oesophagostomum, se u s	payne,rl; maples/	1967
JOPAA 54--3 441	444	odvi	ostertagia, med stom worms	becklund,ww; walk	1968
JOPAA 54--6 1091	1091	odvi	trichostrongylus axei	samuel,wm; traine	1968
JOPAA 55--4 720	725	odvi	distr meninge worm, se	usa prestwood,ak; smi	1969
JOPAA 56--1 123	127	odvi	geog dist, gongylonem,	par prestwood,ak; sm/	1970
JOPAA 56--4 6	7	odvi	ecol menigea worm,	cervids anderson,rc	1970
JOPAA 56--4 299	300	odvi	parasites,relat epizoo fac	samuel,wm	1970
JOPAA 56--5 1038	1038	odvi	new host for psoroptes sp	strickland,rk; g/	1970
JOPAA 57--3 468	493	odvi	spiculosteragia nematoda	doster,gl; friend	1971
JOPAA 57--3 657	659	odvi	fail boophil, trans anapla	kuttler,kl; grah/	1971
JOPAA 57--6 1292	1292	odvi	cestodes of w-t de,	se usa prestwood,ak	1971
JOPAA 58--5 897	902	odvi	parelaphostrongylus,new sp	prestwood,ak	1972
JOPAA 58--5 1010	1011	odvi	occuren, fascioloides,	tex foreyt,wj; todd,	1972
JOPAA 59--1 208	209	odvi	oxy clozanide, fascioloides	forety,wj: todd,a	1973
JOPAA 59--6 1091	1098	odvi	lone star tick, hemat chan	barker,rw; hoch,/	1973
JOPAA 60--4 573	573	odvi	leptostrongyl, georgia,lou	prestwood,ak; pur	1974
JOPAA 60--6 1059	1060	odvi	trichostrongylus, ostertag	pursglove,sr,jr;/	1974
JOPAA 61--1 145	146	odvi	trypanosomes, new york	krinsky,wl	1975
JOPAA 62--1 26	32	odvi	devel large amer liv fluke	foreyt,wj; todd,a	1976
JOPAA 62--1 144	145	odvi	parenteral infec, fasciola	foreyt,wj; todd,a	1976
JOPAA 62--1 166	168	odvi	oesophagostomum in w-t dee	baker,mr; pursglo	1976
JOPAA 62--4 574	578	odvi	eucyathostomum webbi,new s	pursglov,sr,jr	1976
JOPAA 62--5 824	825	odvi	trypanosomes from oklahoma	krinsky,wl; burgd	1976
JOPAA 62--6 1000	1002	odvi	tech det amblyomma infecti	durham,ka; corst/	1976
JOPAA 63--5 938	939	odvi	mamm hosts fasciola, washi	lang,bz	1977
JOPAA 63--6 974	978	odvi	low lev infec parelaphostr	prestwood,ak; net	1977
JOPAA 63--6 1050	1052	odvi	fascioloides magna, w-t de	foreyt,wj; samue/	1977
JOPAA 64--1 14	16	odvi	2 sp of entamoeba, georgia	kingston,n: stabl	1978
JOPAA 64--3 567	568	odvi	filariasis, w-t d, missour	robbins,dj; clark	1978
JPROA 8---1 33	41	odvi	ophryoscolecid fauna, w-t	zielyk,mw	1961
JPROA 18--2 306	308	odvi	ecol factors influ eimeria	samuel,wm; traine	1971
JWIDA 6---1 35	42	odvi	experimental haemonchosis	foreyt,w; trainer	1970
JWIDA 6---1 56	63	odvi	compar, parasit, 2 populat	beaudoin,rl; sam/	1970
JWIDA 6---1 84	86	odvi	neurol dis, meningeal worm	prestwood,ak	1970
JWIDA 6---3 182	183	odvi	pulex porcinus, s	texas samuel,wm; traine	1970
JWIDA 6---4 430	436	odvi	mening worm invas of brain	eckroade,rj; rhe/	1970

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CODEN VO-NU BEPA ENPA ANIM KEY WORDS----- AUTHORS----- YEAR

JWIDA 6---4 437	440	odvi hosts, cattle fever ticks kistner,tp; hayes	1970
JWIDA 7---2 133	134	odvi natural occur haemonchosis prestwood,ak; kel	1971
JWIDA 7---3 142	146	odvi pharyngeal bot fly larvae samuel,wm;train/	1971
JWIDA 7---3 149	154	odvi lungworms in w-t d, se usa prestwood,ak sm/	1971
JWIDA 8---1 63	66	odvi fail establ babesia infect kuttler,kl; grah/	1972
JWIDA 8---2 109	111	odvi device exam brain, helmint smith,jf	1972
JWIDA 8---2 112	114	odvi occurrence demodex, oklaho carpenter,jw; fr/	1972
JWIDA 8---2 163	164	odvi devi, exam sm intes, helmi doster,gl	1972
JWIDA 8---3 233	236	odvi elaeophoros, distri se usa prestwood,ak; rid	1972
JWIDA 8---4 304	310	odvi ecol rela mening wor, cerv anderson,rc	1972
JWIDA 8---4 381	383	odvi mening worm parelaph, okla carpenter,jw; jo/	1972
JWIDA 9---2 136	143	odvi parelaphostrongylus, maine gilbert,ff	1973
JWIDA 9---2 182	193	odvi hepatozoon procyonis, texa clark,ka; robins/	1973
JWIDA 10--1 11	17	odvi strongyloidosis, captiv de forrester,dj: ta/	1974
JWIDA 10--2 146	148	odvi strongyloid, fawns, florid forrester,dj; ta/	1974
JWIDA 10--4 404	409	odvi distrib muscleworm, se usa prestwood,ak; ne/	1974
JWIDA 11--2 256	262	odvi ceel, morph trypanos, mich stuht,jn	1975
JWIDA 12--1 65	71	odvi ixodes scapularis, ontario watson,tg; anders	1976
JWIDA 12--3 361	366	odvi eff 6 fasciolicides, fasci foreyt,wj; todd,a	1976
JWIDA 12--3 380	385	odvi dosh, parasit, common rang prestwood,a; pur/	1976
JWIDA 13--1 2	8	odvi culicoid vector hemorrh, ky jones,rh; rought/	1977
JWIDA 13--1 9	16	odvi trans hemorrhag dis, culic foster,nm; breck/	1977
JWIDA 14--1 89	96	odvi mening worm parelaphos, nh thurston,dr; stro	1978
JWIDA 15--1 51	56	odvi sarcocystis, herbi, nat bi pond,db; speer,ca	1979
JWIDA 15--1 55	56	odvi elaeophora schneideri, tex forent,wj; forent	1979
JWIDA 15--1 83	89	odvi clin-path change, fasciolo forent, wj; todda	1979
JWIDA 15--2 273	280	odvi exp infect, elaeophora sch titche,ar; prestw	1979
JWIDA 15--3 405	408	odvi gast-intest helminths, ill cook,tw; ridgewa/	1979
JWMAA 5---2 141	158	odvi tissue chan, lungworm infe goble,fc	1941
JWMAA 15--2 216	220	odvi disease, winter mortality cheatum,el	1951
JWMAA 31--2 299	303	odvi alal, pneumostrongyl, minn karns,pd	1967
JWMAA 31--3 455	459	odvi theileriasis in texas wtd robinson,rm; kut/	1967
JWMAA 32--4 963	966	odvi pneumostrongylus, maine behrend,df; witte	1968
JWMAA 33--4 888	894	odvi tech, surv, helmin, protoz samuel,wm; traine	1969
JWMAA 34--3 546	552	odvi mort, tissue destr, ticks bolte,jr; hair,j/	1970
JWMAA 36--4 1349	1353	odvi dist meningeal worm, canad bindernagel,ja; a	1972
JWMAA 37--2 183	186	odvi deer ked infestatio. texas davis,jw	1973
JWMAA 37--3 327	330	odvi mening worm, moose pop,ont saunders,bp	1973
JWMAA 40--3 579	581	odvi protozo, helmnth, key deer schulte,jw; klim/	1976
JWMAA 41--2 169	177	odvi manage impl abomasal paras eve,jh; kellogg,f	1977
MUATA 159-- 1	20	odvi helminths of deer, minneso olsen,ow; fenster	1943
NAWTA 1---- 473	478	odvi lungworm situation, michig o'roke,ec	1936
NAWTA 4---- 244	249	odvi prevalenc, dis, para, mich whitlock,sc	1939
NAWTA 28--- 225	232	odvi tropical cattle fever tick marshall,cm; sea/	1963
NAWTA 33--- 364	372	odvi domes rumin, endoparasites samuel,wm	1968

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CODEN VO-NU BEPA ENPA ANIM KEY WORDS-----				AUTHORS-----	YEAR
NFGJA 17--1 45	49	odvi	nematode, pneumostrong,	ny behrend,df	1970
NFGJA 20--2 158	161	odvi	liver flukes, adironda,	ny behrend,df; matt/	1973
PAVEA 2---- 360	379	odvi	develop pneumostrongy,	cns anderson,rc	1965
PCGFA 12--- 224	227	odvi	liver flukes, southeast de holland,jb		1958
PCGFA 19--- 128	141	odvi	incid, pneumostrongyl, vir dudak,d;	cornwel/	1965
PCGFA 29--- 651	655	odvi	nasal bots,w-t dee,	se usa nettles,vf	doste 1975
PHSWA 6---2 102	104	odvi	helminth parasites, florid dinaburg,ag		1939
PHSWA 42--2 141	143	odvi	range exten rec, helmin,ky heuer,de;	philli/	1975
PHSWA 44--1 107	108	odvi	helminth paras, nj, oklahoma pursglove,sr,jr		1977
PHSWA 44--2 179	184	odvi	trypanosoma cervi, se usa kingston,n;	crum,	1977
PRLBA 206-- 395	402	odvi	malaria paras, rel plasmod	garnham,pcc; kutt	1980
PSDAA 48--- 47	57	odvi	odhe, parasites, so dakota boddicker,ml;	hug	1969
PUNMA 79-18 1	6	odvi	nema, ostertagia, vir deer	dikmans,g	1931
SENTD 4---3 192	194	odvi	tick survey, sou tex count	garnett,wh; ahren	1979
TAMSA 54--2 138	144	odvi	lungworms from w-t deer, m	dikmans,g	1935
TISAA 60--2 203	203	odvi	lone star ticks, illinois montgomery,gg;	ha	1967
TRCIA 34... 57	92	odvi	helminth, arthro parasites	anderson,rc	1962
VTPHA 13--5 381	393	odvi	exp parelaphostrongy infec	nettles,vf; prest	1976
WDABB 2---4 100	107	odvi	2 surv meth, helminth infe	samuel,wm; beaudo	1966
WDABB 3---4 182	183	odvi	tick transm, theileriasis	kuttler,kl; robi/	1967
WDABB 4---4 142	143	odvi	isolation of a babesia	emerson,hr; wrigh	1968
WDABB 5---1 25	26	odvi	sarcocystis in w-tail deer	karstad,l; traine	1969
WDABB 5---2 108	108	odvi	new host, ambylyommainornat	cook,rs; glazene/	1969
WDABB 5---3 137	139	odvi	comp, parasit, cent, e tex	emerson,hr	1969
WDABB 5---3 351	356	odvi	eimeria, penn, tex, wiscon	anderson,dr; samu	1969
WDABB 5---4 398	399	odvi	trypanosomiasis in w-t dee	kistner,tp; hanso	1969
WIDIA 63--- 1	59	odvi	path, exp fasciola hep inf	presidente,pja;	/ 1974

CODEN VO-NU BEPA ENPA ANIM KEY WORDS-----				AUTHORS-----	YEAR
AESAA 68--1 63	67	odhe	dermacentor alb	hydridizat ernst,se; gladney	1975
AJVRA 38--8 1205	1209	odhe	hist study, exp sarcoc hem	koller,ld; kistn/	1977
CAFGA 20--3 181	282	odhe	life hist, food hab, calif	dixon,js	1934
CAFGA 56--1 71	71	odhe	jay feeding on ectoparasit	schulz,ta; budwis	1970

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CODEN VO-NU BEPA ENPA ANIM KEY WORDS-----AUTHORS-----				YEAR
CJZOA 53--7 977	992	odhe behavior of nose bot flies	anderson,jr	1975
CNRDA 21--6 171	187	odhe 2 dipterous paras, lif his	cowan,i mct	1943
CNRDA 24--3 71	103	odhe parasites, dis, injur, b c	cowan,i mct	1946
GRBNA 37--3 407	410	odhe occur ticks, mule de, utah	pederson,jc	1977
IZSPB 1---- 1	45	odhe odvi, checklist, parasites	walker,ml; becklu	1970
JAVMA 96--- 542	542	odhe host, nemato eye wor, cali	oberhansley,fr	1940
JMENA 10--2 225	226	odhe euschoengastia sp, oregon	easton,er; krantz	1973
JMENA 13--2 169	173	odhe dada, transf bovicola, cal	westrom,dr; nels/	1976
JMENA 13--3 375	377	odhe hematophag acti, hybomitra	clark,gg; hibler/	1976
JMENA 16--5 448	449	odhe barbary sh, ectoparas, tex	gray,gg; pence,db	1979
JOPAA 45--4 32	32	odhe louse flies, w montana	senger,cm; capell	1959
JOPAA 45--4 32	32	odhe cephennyia jellisoni, mon	capelle,kj; senge	1959
JOPAA 53--2 392	394	odhe nematodirus odocoilei	becklund,ww; walk	1967
JOPAA 56--5 1039	1040	odhe ear scab mites, psoroptes	roberts,ih; mele/	1970
JOPAA 60--6 972	975	odhe prev eye worm, 3 pop, oreg	beitel,rj; knapp/	1974
JWIDA 6---2 110	111	odhe experim infect, elaeophora	hibler,cp; adcoc/	1970
JWIDA 8---4 325	326	odhe trypanosomes, n mex, color	clark,gg	1972
JWIDA 9---1 34	40	odhe treat, dictyocaulus, capti	presidente,pja; /	1973
JWIDA 9---1 41	43	odhe doca suscep dictyocaul iso	presidente,pja; k	1973
JWIDA 9---3 213	220	odhe host, filarial worms, calif	weinmann,cj; and/	1973
JWIDA 10--1 44	46	odhe exp infect elaeophora schn	hibler,cp; gates/	1974
JWIDA 10--4 361	369	odhe morph larv stag elaeophora	hibler,cp; metzge	1974
JWIDA 11--2 214	220	odhe exp induc fasciola infect	kistner,tp; kolle	1975
JWIDA 11--4 519	521	odhe trypanosomes, mule d, wyom	kingston,n; mort/	1975
JWIDA 12--1 86	87	odhe doca, sp diff, sarcocystis	hudkins-vivion,g/	1976
JWIDA 13--1 33	39	odhe trypanosoma cervi, wyoming	matthews,mj; kin/	1977
JWIDA 13--1 80	84	odhe sarcocystis hemionilatrani	hudkins,g; kistne	1977
JWIDA 13--2 137	143	odhe mening worm indu neuro dis	nettles,vf; pres/	1977
JWIDA 15--1 51	53	odhe sarcocystis, herbi, nat bi	pond,db; speer,c	1979
JWMMA 12--1 105	106	odhe granular tapeworm, echinoc	owan,im	1948
JWMMA 23--1 119	122	odhe cysticerci of taenia, colo	olsen,ow; william	1959
NAWTA 18--- 168	188	odhe dosh, parasite interrelati	longhurst,wm; dou	1953
NAWTA 22--- 160	166	odhe dosh, exp trans, nematodes	bakerlnf; longhu/	1957
PHSWA 18--2 120	122	odhe porcupine nematode, colora	olsen,ow; tolman,	1951
PHSWA 39--1 135	138	odhe prev helminth paras, monta	worley,de; eustac	1972
PHSWA 45--1 139	141	odhe helmin, sympat barbary she	gray,gg; simpson/	1978
PHSWA 47--2 266	267	odhe gongylonema, n. w. califor	botzler,rg; fanto	1980

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CODEN VO-NU BEPA ENPA ANIM KEY WORDS----- AUTHORS----- YEAR

PPETA 19--4 139	147	odhe ixodes sp, mule dee, skunk cooley,ra; kohls,	1943
PPETA 21--2 48	57	odhe deer lousefly calif hare,je	1945
PPETA 21--3 120	120	odhe cephennyia, nasal bot herman,cm	1945
TAMSA 88--4 589	591	odhe new, eimeria ivensae, mont todd,ks,jr; ogara	1969
WGFBA 8---3 13	22	odhe internal parasites, wyomin landram,jf; hones	1955

CODEN VO-NU BEPA ENPA ANIM KEY WORDS----- AUTHORS----- YEAR

ACVTB 41--1 117	124	ceel subcutaneous filariases in dykova,i; blazek,	1972
ACVTB 41--2 197	201	ceel microfilariae, tiss reacti dykova,i	1972
APMIA 65--4 613	620	ceel tick, encephal virus, swed svedmyr,a; zeipe/	1965
APRPA 8--21 345	350	ceel paramphistomum cervi, dise zadura,j	1960
CAFNA 63--5 204	205	ceel echinococcus granulo, banf green,hu	1949
CJZOA 47--5 795	803	ceel incidenc, abund, parasites flook,dr; stenton	1969
FPPARA 16--1 74	74	ceel elaphostron, cent nerv sys dykova,i	1969
JAVMA 140-7 689	690	ceel transfer, psoroptic mites hepworth,wg; thom	1962
JOPAA 59--6 1132	1133	ceel trypanosomes from elk, wyo kingston,n; morto	1973
JOPAA 61--1 17	23	ceel trypanosom cerv sp. n. wyo kingston,n; morto	1975
JPROA 21--3 448	448	ceel babesia sp. in sc red deer blewett,da; adam/	1974
JWIDA 5---3 348	350	ceel reserv host, domest parasi worley,de; barre/	1969
JWIDA 8---1 57	62	ceel doca, cross-transmis exper presidente,pja; /	1972
JWIDA 9---2 148	153	ceel neurol dis, meningeal worm carpenter,jw; jo/	1973
JWIDA 10--1 63	65	ceel trypanosomes, horse flies davies,rb; clark,	1974
JWIDA 11--1 40	44	ceel prev dictyoc vivp infect bergstrom,rc	1975
JWIDA 11--1 66	67	ceel psoroptic mange in wapiti colwell,da; dunla	1975
JWIDA 13--2 149	154	ceel prev, parelaphostr, capt p woolf,a; mason,c/	1977
JWIDA 14--2 263	268	ceel neurolog diseas, capt herd olsen,a; woolf,a	1978
JWIDA 15--1 33	36	ceel prev, parelaphostron, capt olsen,a; woolf,a	1979
JWIDA 15--1 51	53	ceel sarcocystis, herbi, nat bi pond,db; speer,c	1979
KLVBA 1962. 49	61	ceel dada endoparasites, denmar gui'dal,ja	1962
NEZTA 24--1 22	23	ceel elaphostrongylus cervi in mason,pc; kiddey/	1976
NEZTA 24--1 23	23	ceel dicty viv, elaph cer, wapi mason,pc; mcallum	1976
NEZTA 24-11 263	266	ceel elaph cer, gross hist lesi sutherland,rj	1976
NZASA 11--4 182	183	ceel gastrointest parasitism in mason,pc	1977

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CODEN	VO-NU BEPA ENPA ANIM KEY WORDS-----	AUTHORS-----	YEAR
NZJSA 11--4	686 692 ceel ophryoscolecid ciliat, n z clarke,rtj		1968
PAHUA 9----	73 84 ceel seasonal incidence larvae sugar,l		1976
PAHUA 10...	95 96 ceel occur elaphostron, hungary sugar,l; kawai,a		1977
PARAA 73--1	1 11 ceel isola, char, babesia from adam,kmg; blewet/		1976
PAVEA 6----	185 213 ceel path-elaeophorosis adcock,jl; hible/		1969
PHSWA 42--2	179 181 ceel mult stag tryp cerv, splee kingston,n; morto		1975
PHSWA 47--2	266 267 ceel gongylonema, n. w. calif botzler,rg; fanto		1980
TMPRA 26--1	60 69 ceel onchocera flexuosa, germny schulz-key,h		1975
TMPRA 26--3	348 358 ceel filariidae of, germany schulz-key,h		1975
VETRA 100--	252 252 ceel warble fly in red deer (co dear,jp)		1977
VETRA 100--	346 346 ceel warble fly in red deer (co ray,rj)		1977
WDABB 1---4	48 48 ceel elaeophoriasis in elk adcock,jl; hibler		1965
WDABB 2---1	5 6 ceel dictyocaulus, s-cent monta barrett,re worley		1966
WDABB 5---1	23 24 ceel some parasites, new mexico wilson,gi		1969
WDABB 5---1	27 30 ceel elaeophorosis, new mexico hibler,cp; adcock/		1969
WDABB 5---2	95 98 ceel fringed tapeworm, yellowst jacobson,rh; wor/		1969
WGFBA 8---4	25 28 ceel eimeria of elk, new specie honess,rf		1955

CODEN	VO-NU BEPA ENPA ANIM KEY WORDS-----	AUTHORS-----	YEAR
AESAA 67---	204 214 alal tax, lif hist moos fly, wy burgerr,jf; ander		1974
AJVRA 3---9	403 408 alal parasites, northern minnes olsen,ow; fenster		1942
AJVRA 27---	548 558 alal cerebro nema, minn,pneummo kurtz,hj; loken,/		1966
ATMPA 58...	307 314 alal intro reindeer, hydatid dis sweatman,gl		1964
BEREA 17---	249 249 alal moose-tick in saskatchewan cameron,ae; fulto		1927
CAENA 102--	1461 1473 alal od, tabanid, distr, ontar smith,sm; davies/		1970
CJZOA 43--4	635 639 alal neurologic signs, ontario anderson,rc		1965
CJZOA 52--2	235 245 alal nematode,trematod, manitob lankester,mw		1974
CJZOA 52--3	401 403 alal od, elaphostrongy, alberta samuel,wm; holmes		1974
CJZOA 54--3	307 312 alal helminths in moose, albert samuel,wm; barre/		1976

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CODEN	VO-NU	BEPA	ENPA	ANIM	KEY WORDS-----	AUTHORS-----	YEAR
CNVJA	5--11	287	296	alal	elaphostrongylosis, deer, smith,hj; archib/	1964	
CNVJA	12--2	56	56	alal	infect dictyocaulus calv gupta, rp; gibbs,h	1971	
JAVMA	37--5	770	775	alal	parasites, moose, minnesot wallace,fg	1934	
JAVMA	171-9	987	988	alal	cerebr nematodiasi, n hamp stackhouse,ll	1977	
JEBCA	67---	24	29	alal	odhe, dermacen tick, paral wilkinson,pr	1970	
JOMAA	39--1	139	145	alal	paras, dis, wells gray her ritcey,rw; edward	1958	
JOMAA	39--3	449	450	alal	onchocerca in an alaska mo williams,rb; babe	1958	
JOMAA	48--4	668	669	alal	parasites, newfoundland threlfall,w	1967	
JOPAA	18--4	219	231	alal	new disease in moose, minn thomas,lj; cahn,a	1932	
JOPAA	18--4	303	303	alal	hematodirella, moose, minn dikmans,g	1932	
JWIDA	8---3	242	244	alal	elaeophorosis, montana worley,de; ander/	1972	
JWIDA	15--2	281	284	alal	dermacentor, ontario addison,em; john/	1979	
JWMAA	23--1	122	123	alal	preva, hydatid dis, alaska rausch,ra	1959	
JWMAA	31--2	299	303	alal	pneumostrong, deer, minnes karns,pd	1967	
JWMAA	33--2	431	433	alal	pneumost, deer-free island karns,pd; jordan	1969	
JWMAA	37--1	327	330	alal	odvi, mening worm, ontario saunders,bp	1973	
JWMAA	38--1	42	46	alal	parelaphostrongylus, maine gilbert,ff	1974	
NCANA	101--	23	50	alal	infect, parasi dis, n amer anderson,rc; lan	1974	
PAVEA	1----	289	322	alal	neuro dis, exp pneumostron anderson,rc	1964	
PAVEA	2----	360	376	alal	motor ataxia, paral, pneum anderson,rc	1964	
XENOB	6....	168	169	alal	deer louse fly, se finland brander,t	1976	

CODEN	VO-NU	BEPA	ENPA	ANIM	KEY WORDS-----	AUTHORS-----	YEAR
AEHLA	25--4	246	252	rata	obs on some nat-foc zoonos rausch,r1	1972	
AGBOB	12--1	23	28	rata	warble-fly problem in alas washburn,rh; kle/	1980	
AVCSA	3---3	201	225	rata	cereb, muscu nematod, swed roneus,o; nordkvi	1962	
AVCSA	6---4	353	359	rata	experim babesia infections nilsson,o; nordk/	1965	
AVCSA	14--4	642	644	rata	onchocercosis in swedish r rehbinder,c	1973	
AVCSA	16--1	14	23	rata	giant cell reac, echinococ roneus,o	1975	
AVCSA	17--3	359	362	rata	echinococcosis, slaughter kummeneje,k; waag	1976	
AVCSA	18--1	75	85	rata	keratitis in reindeer rehbinder,c	1977	
AVCSA	18--1	86	90	rata	dictyocaulus viviparus inf kummeneje,k	1977	
ATMPA	58...	307	314	rata	intro reindee, hydatid dis sweatman,gl	1964	
				rata	continued on the next page		

CODEN VO-NU BEPA ENPA ANIM KEY WORDS-----				AUTHORS-----	YEAR
BPURD 1----	509	517	rata warble fly distrib,	canada kelsall,jp	1975
CAFNA 90--2	189	191	rata paras,	woodland caribo, bc low,wa	1976
CJZOA 49--2	159	166	rata odvi,	neurolog dis, ontari anderson,rc	1971
CJZOA 49--2	280	281	rata fascioloides magna tremato	chouquette,lpe; /	1971
CJZOA 54--5	680	684	rata protostongylid nematode	lankester,mw; cr/	1976
CNJMA 21--6	199	203	rata parasites,	reindee, canada choquette,lpe; w/	1957
CNRDA 10---	527	531	rata skrjabinema oreamni,	canad swales,we	1934
DOBTA 119-3	621	621	rata life cycle,	nematode, rein mitskevich,v iu	1958
FPWTA 33---	30	39	rata dis condit,	parasi, bar gr broughton,e; chou	1969
JOPAA 9---1	38	39	rata parasites,	alaska hadwen,s	1922
JOPAA 9---1	48	48	rata nematodirus tarandi,	reind hadwen,s	1922
JOPAA 28--5	423	423	rata parasites,	woodland caribo erickson,ab; high	1942
JOPAA 46--5	624	628	rata redescrit,	avitellina arcti gibbs,hc	1960
JWIDA 7---4	242	245	rata occure setaria in	reindeer dieterich,ra; lui	1971
JWIDA 9---4	376	378	rata mort due to meningeal worm	trainer,dd	1973
JWIDA 12--4	566	571	rata besnoitiosis in woodla car	wobeser,g	1976
NOVDA 16--4	390	395	rata hist stud,	parasit nodule lisitzin,p	1964
NOVDA 25--6	203	210	rata elaphostrongylosis,	reind bakken,g; sparboe	1973
NOVTA 30--4	214	216	rata gastric para,	winter slau rehbinder,c; szo/	1978
NOVTA 31--6	282	283	rata parasit visceral granuloma	rehbinder,c; chr/	1979
PARAA 66--1	123	132	rata solenopotes-tarandi,	ba-gr weisser,cf; kim,k	1973
ZEVMA 25B-1	81	87	rata antiparas eff,	tetramisolu kurkela,p; kaante	1978

CODEN VO-NU BEPA ENPA ANIM KEY WORDS-----				AUTHORS-----	YEAR
JOPAA 19--3	246	246	anam onchocerca,	subcut tissue dikmans,g	1933
JOPAA 28--2	167	168	anam a new coccidium from	anam huizinga,h	1942
JOPAA 40--6	637	648	anam internal parasites,	n dakota goldsby,ai; evele	1954
JOPAA 44--5	514	514	anam ornithodoros (otobins)	meg schad,ga	1958
JOPAA 46--5	671	671	anam thysanosoma actinioides	allen,rw; samson,	1960
JOPAA 56--4	759	767	anam dosh, immun, haemonch isol	allen,rw; samson/	1970
JOPAA 56--5	917	917	anam otobius-megnii, ears,	n mex meleney,wp; rober	1970
JWIDA 8---4	332	334	anam capillaria-hepatica,	alber barrett,mw; chalm	1972
JWIDA 10--1	60	62	anam infect podo dermati,	alber chalmers,ga; barr	1974
JWIDA 10--1	70	73	anam protostr-macrotis nem,	wyo greiner,ec; worl/	1974

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PHSWA 12--1 2	4	anam distribut, pseudostertagia lucker,jt; dikman	1945
PHSWA 20--2 96	97	anam thysanosoma, pronghorn ant allen,rw; kyles,p	1953
PHSWA 27--1 69	73	anam helminth parasites, ne mex gilmore,re; allen	1960
PHSWA 42--1 61	63	anam dosh, marshallagia, wyomin bergstrom,rc	1975
PNDA 6---- 25	25	anam coll, ident parasit. nd an goldsby,ai	1955
PNDA 17--- 70	71	anam od epizootic, n dak badlan richards,sh	1963
TRSTA 66--2 335	335	anam trypanosome infection, cap roberts,cj; gray,	1972
WDABB 3---2 71	73	anam inci, eimeria antelocaprae todd,ks jr; hamm/	1967

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AESAA 63--3 635	639	bibi associati face fly, n amer burger,jf; anders	1970
CNVJA 2---5 168	174	bibi parasites, disease, canada chouquette,lpe; /	1961
COVEA 69--2 198	205	bibi ostertagiosis, case rep, n wade,se; haschek/	1979
JAVMA 119-- 386	387	bibi parasitism in bison frick,ej	1951
JOPAA 22--5 517	518	bibi arthropod, helminth parasi roudabush,rl	1936
JOPAA 39--1 58	59	bibi parasites, bibi, nw u s locker,b	1953
JOPAA 50--5 655	655	bibi speleognathus australis, b drummond,ro; mad/	1964
JOPAA 53--4 724	724	bibi sheep liver fluke, wyoming bergstrom,rc	1967
JWIDA 11--3 412	414	bibi bovine coccidia, wyoming ryff,kl; bergstro	1975
JWIDA 15--1 51	53	bibi sarcociptis, herbi, nat bi pond,db; speer,ca	1979
NAWTA 28--- 233	239	bibi paras, dis, anthrax, canad novakowski,ns; c/	1963
NOSCA 26--2 61	64	bibi tick paralysis, amer bison kohls,gm; kramis,	1952
NPSMD 1....	bibi bison, yellowstone natl pk meagher,mm	1973
VETRA 100-- 406	406	bibi redwater in, babesia major findlay,cr; begg,	1977
WMBA 16--- 1	52	bibi biol, mngt, wood buf na pk fuller,wa	1966

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ARMIA 25--- 231	254	ovca pathogenicit, soil amoebas culbertson,cg	1971
CEXIA 8---2 345	354	ovca lungw infec, homocytotr an hudson,rj; bandy/	1971
CJCMA 36--1 69	73	ovca cell adher, lungworm infec hudson,rj; bandy/	1972

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CODEN VO-NU BEPA ENPA ANIM KEY WORDS-----				AUTHORS-----	YEAR
CJZOA 41--6 913	918	ovca parasi, calif bigh, sou bc blood,da			1963
CJZOA 49--4 507	512	ovca helminths, rocky mt, canad uhazy,ls; holmes,			1971
CJZOA 49-11 1461	1464	ovca coccidia, rocky mt, canada uhazy,ls; mahrt,/			1971
CJZOA 51--8 817	824	ovca lungworms, rocky mt, canad uhazy,ls; holmes/			1973
CJZOA 53--4 391	394	ovca lymp cell adher, protostro hudson,rj			1975
DABBB 40B-4 1640	1640	ovca pathogenesis pulm protostr spraker,tr			1979
JKESA 35--4 369	370	ovca a new species, mallophaga emerson,kc			1962
JOPAA 41--6 583	587	ovca parasites, new mexico allen,rw			1955
JOPAA 52--3 618	621	ovca oestrus ovis, wyom, montan capelle,kj			1966
JOPAA 53--1 157	165	ovca parasi, checklist, rocky m becklund,ww; seng			1967
JOPAA 58--1 29	33	ovca moufflon hybri, protostron monson,ra; post,g			1972
JOPAA 59--1 136	140	ovca redescr trichuris-schumako knight,ra; uhazy,			1973
JWIDA 6---3 169	170	ovca mycoplas, pneumo, rocky mt woolf,a; kradel,/			1970
JWIDA 8---4 389	389	ovca transplac trans, protostro hibler,cp; lange/			1972
JWIDA 10--1 39	41	ovca trans placen, protostr inf hibler,cp; metzg/			1974
JWIDA 11--2 193	194	ovca wyominia-tetoni, washingt colwell,da; dunl/			1975
JWIDA 12--1 48	51	ovca influ rain, lungworm infec forrester,dj; li/			1976
JWIDA 13--2 117	124	ovca pneumon, muelleri sp, capt demartini,jc; dav			1977
JWIDA 13--2 125	130	ovca helminth parasites, oregon kistner,tp; matl/			1977
JWIDA 13--3 248	250	ovca prenat infec, lungw, alber gates,cc; samuel,			1977
JWIDA 15--4 561	561	ovca transplacental trans, prot kistner,tp; wyse/			1979
JWIDA 16--1 77	82	ovca psoroptic scabils, new mex lange,re; sandov/			1980
JWMAA 28--3 481	491	ovca surv, lungworm infect, mon forrester,dj; sen			1964
JWMAA 38--4 771	774	ovca lamb prod, surv, mort, col woodard,tn; guti/			1974
JWMAA 43--2 461	467	ovca eval drug treatment, lungw schmidt,rl; hibl/			1979
PHSWA 10--1 8	9	ovca lungwor, protostron, yello dikmans,g			1943
PHSWA 19--1 39	39	ovca parasites, new mexico allen,rw; kennedy			1952
PHSWA 23--1 68	69	ovca lungworms, montana marquardt,wc; sen			1956
PMASA 22--- 82	92	ovca land mollusca, protostrong forrester,dj			1962
WDABB 3---2 74	76	ovca virus isola, lung, nemato forrester,dj; wad			1967

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JPROA 21--2 197 199 ovda new spec protozoa, eimeria clark,gw; colwell 1974
 JWIDA 13--4 427 428 ovda popula, bovicola jellisoni kim,kc 1977

CODEN VO-NU BEPA ENPA ANIM KEY WORDS----- AUTHORS----- YEAR

CJZOA 36--4 529 532 obmo helminth parasit, nwt, can gibbs,hc; tener,j 1958
 CJZOA 55--6 990 999 obmo ovca, new eimeria species duszynski,dw; sa/ 1977
 CNVJA 17--5 138 139 obmo haemonchosis, captive calf macdonald,dw; sa/ 1976
 ETBRA 30--- 222 224 obmo hypodermatid larvae dipter jansen,j,jr 1970
 JAVMA 131-3 195 196 obmo parasitosis in a musk ox durrell,wb; bolto 1957
 JWMAA 38--4 775 782 obmo parasitic infection in mus samuel,wm; gray,d 1974

CODEN VO-NU BEPA ENPA ANIM KEY WORDS----- AUTHORS----- YEAR

CNRDA 10--- 527 531 oram skrjabinema oreamni, canad swales,we 1933
 JOPAA 51--6 945 947 oram nematodirus maculosus becklund,ww 1965
 JWMAA 30--4 786 790 oram parasites, w centr alberta kerr,gr; holmes,j 1966
 JWMAA 35--1 94 103 oram parasite, pestic, so dakot boddicker,ml; hu/ 1971

CODEN VO-NU BEPA ENPA ANIM KEY WORDS----- AUTHORS----- YEAR

ACVTB 43--4 411 416 many treatment fasciola hepatic chroustova,e 1974
 DKBSA 199-- 505 506 dev caus agent, setariosis shol,va; drobisch 1972
 ENAMA 21--1 1 220 many melophaginae (diptera) bequaert,j 1942
 FPARA 19--3 253 256 many studies, toxoplasmosis, na catar,g 1972
 FPARA 24--1 35 40 many helmint, wiru, intro czech kotrla,b; kotrly, 1977
 IJLAA 43-10 944 947 mamm species composit, coccidia bhatia,bb; chauh/ 1974

continued on the next page

CODEN VO-NU BEPA ENPA ANIM KEY WORDS-----				AUTHORS-----	YEAR
JMENA 13--1 115	118	repellency of n,n-diethyl-	schreck,ce; smit/		1976
JMENA 13--3 225	275	many anim dis agent	tran, flies krinsky,wl		1976
JMENA 13--3 375	377	hematophag,	hybomitra spec clark,gg; hibler/		1976
JOHLA 40--- suppl 1		mamm bibliography,	lung nematod forrester,dj; fo/		1966
JOPAA 56--4 6	7	many ecol relation,	meningea wo anderson,rc		1970
JOPAA 55--2 359	368	many tax, host, dist	sefaria, u becklund,wm; wal/		1969
JOPAA 55--5 1067	1074	many helminths, big game,	s.d. boddickey,ml; hu/		1969
JOPAA 56--4 408	408	many furthr toxoplasma	isolatns catar,g		1970
JOPAA 57--1 191	192	many prev, geog distr,	cooperia burtner,rh; beckl		1971
JWIDA 6---4 194	204	ecol approach, zoonoti	dis johnson,hn		1970
JWIDA 9---1 21	25	many horse fli, elaeophor,	n mex clark,gg; hibler,		1973
JWIDA 9---2 160	162	parasites of blackbuck ant	thornton,je; gal/		1973
JWIDA 11--4 486	488	many elaleophora-schneid,	monta worley,de		1975
JWIDA 12--2 233	236	many trypanoso, game anim,	wyom morton,jk; kingst		1976
JWIDA 12--3 322	325	mamm prev antibod,	toxoplas, ont tizard,ir; bille/		1976
JWIDA 12--4 550	551	cerebral coenurosis, wild	toofanian,f; ivog		1976
JWIDA 14--2 157	162	many toxoplasmosis, norway,	swe kapperud,g		1978
JWIDA 15--1 51	54	sarcocystis, herbivor,	mon pond,db; speer,ca		1979
NEZTA 21--3 43	47	many host paras checklist	n zea andrews,jrh		1973
OUOKA 24-11 2	7	ticks can kill!	hair,ja		1968
PARAA 59--3 649	661	anal, host-parasi	interact ractliffe,lh; ta/		1969
PHSWA 1---2 63	64	many helminth parasites	dikmans,g		1934
PHSWA 6---2 97	101	many helminths, n.a.,	wild rumi dikmans,g		1939
POASA 55--- 101	102	many prevale marshallagia,	wyom bergstrom,rc		1975
SEHEA 8---3 267	...	hematolog manif,	paras inf conrad,me		1971
WGFBA 9---- 1	279	many wildlife wyoming,	disease honess,rf; winter		1956
ZTMPA 24--4 457	466	many studies on stephanofilaria	patnaik,b		1973

CODEN VO-NU BEPA ENPA ANIM KEY WORDS-----				AUTHORS-----	YEAR
ACVTB 45--1 133	140	rumi dynamics of cocc,	helminth tilc,k; hanuskova		1976
JOPAA 32--1 7	16	rumi hosts, protostron sp,	key dougherty,ec; gob		1946
TGMEA 30... 156	...	rumi doca, theileriidae	sporozo uilenberg,g		1978

CODEN VO-NU BEPA ENPA ANIM KEY WORDS----- AUTHORS----- YEAR

ASISA 29--- 536 536 wiru parasitic bronchopneumonia julini,m; peracin 1976
 NEZTA 21--3 43 47 wiru host-parasite checklist, h andrews,jrh 1973
 PAHUA 7---7 181 189 wiru occ of nasal throat bot fl sugar,l 1974
 ZTMPA 24--4 467 478 wiru species of haemonchus, dom sachs,r; gibbons/ 1973

CODEN VO-NU BEPA ENPA ANIM KEY WORDS----- AUTHORS----- YEAR

JWIDA 15--1 51 53 herb sarcocystis in free-rangin pond,db; speer,ca 1979
 PAHUA 9---- 85 96 biga incidence larvae of hypode sugar,l 1976
 TMPRA 29--2 223 233 ungu invest, trypanosome carrie drager,n; mehlitz 1978

CODEN VO-NU BEPA ENPA ANIM KEY WORDS----- AUTHORS----- YEAR

IVEJA 49--2 133 135 axax obser on fascioliasis, zoo rao,at; acharjyo, 1972

CODEN VO-NU BEPA ENPA ANIM KEY WORDS----- AUTHORS----- YEAR

ACVTB 43--1 65 77 caca helminths, coccidia, ecolo dyk,v; chroust,k 1974
 NATUA 200-2 490 490 caca host, muellerius capillari fairlie,g 1963
 NATWA 65--- 395 395 caca intermediate host, coccidi entzeroth,r; sch/ 1978
 PAHUA 9---- 67 71 caca dipetalonema rugosicauda n meszaros,f; sugar 1976
 PARAA 55--4 739 475 caca gastro-int helminths, brit dunn,am 1965
 RSZOA 81--1 13 24 caca endoparasites of roe deer andrews,jrh; hor/ 1974

CODEN VO-NU BEPA ENPA ANIM KEY WORDS----- AUTHORS----- YEAR

JAASA 42--- 133 133 dada surv, intrnl paras, alabam brugh,th,jr 1971
 JWIDA 13--1 55 58 dada nat occur neurologic disea kistner,tp; john/ 1977
 JWIDA 13--4 440 444 dada cerebrospnl parelaphostron netties vf: pres/ 1977

dada continued on the next page

CODEN VO-NU BEPA ENPA ANIM KEY WORDS----- AUTHORS----- YEAR
JZOOA 177-4 494 496 dada occurrence certain ectopar jackson,j 1975
PHSWA 41--2 250 250 dada new host rec, setaria yehi phillips,jh; har/ 1974
TMPRA 26--4 494 498 dada caca, filariidae, germany schulz-key,h 1975

CODEN VO-NU BEPA ENPA ANIM KEY WORDS----- AUTHORS----- YEAR
BSKBA 31--- 153 154 ceni pathol studi, fascioliasis tomimura,t; hira/ 1979
JWIDA 14--1 137 141 ceni elaeophorosis, texas robinson,rm; jon/ 1978

CODEN VO-NU BEPA ENPA ANIM KEY WORDS----- AUTHORS----- YEAR
ATRLA 12-26 377 384 bibo helminthofauna, euro bison drozdz,j 1967

CODEN VO-NU BEPA ENPA ANIM KEY WORDS----- AUTHORS----- YEAR
JWIDA 15--2 263 265 ovli gast-intest helminths, ira eslamia; meydan/ 1979

CODEN VO-NU BEPA ENPA ANIM KEY WORDS----- AUTHORS----- YEAR
ACVTB 43--2 123 131 ovmu caca, helminths, coccidia dyk,v; chroust,k 1974
FFPARA 15--2 178 178 ovmu neostrongylus linearis chroust,k; dyk,v 1968
VPARD 1---2 145 150 ovmu caca, incid, trans, coccid dyk,v; chroust,k 1975

UNIT 1.2: DISEASES

The word disease can be loosely interpreted to include any departure from health, or more strictly interpreted as a response to a pathogenic microorganism. The Merck Veterinary Manual tends toward the first interpretation, as references are made to parasitic diseases, or malfunctions caused by parasites. The sorting of large numbers of references in this area was done on the basis of the second definition. Thus the reference lists in this UNIT 1.2 includes those departures from normal health that can be attributed to infectious diseases, or microscopic organisms that upset normal physiological functions and metabolic pathways.

Since extra energy demands result from infections, adequate quantities of good quality food help prevent or alleviate the effects of pathogens. While there are large amounts of information on the nutrient requirements of healthy domestic ruminants, there is very little on their requirements when exposed to infections and metabolic disorders, and even less information on wild ruminants. The general principle stated with reference to the effects of parasites also applies to diseases; animals on good range will very likely be affected less than those on poor range. Prevention of problems is better than having to cure them, and wild ruminant ranges in good condition, not suffering from overgrazing or overbrowsing, will likely not harbor an unusually large number of pathogens.

The next several pages of reference lists on diseases have been sorted according to the criteria explained above. Such sorting cannot be perfect, so there may be important papers in both UNITS 1.1 and 1.2 that should be consulted when reviewing the literature. The arrangement should greatly facilitate finding of the literature.

REFERENCES, UNIT 1.2

DISEASES

SERIALS

CODEN VO-NU BEPA ENPA ANIM KEY WORDS----- AUTHORS----- YEAR

CBCPA 57A-4 391 398 arti haemoglobins, erythro sickl butcher,pd; hawke 1977

CODEN VO-NU BEPA ENPA ANIM KEY WORDS----- AUTHORS----- YEAR

JWIDA 6---4 376 383 cerv maligna catarrhal fev, tex clark,ka robins/ 1970

NAWTA 28--- 199 206 cerv leptospirosis, ontario dee mcgowan,je; kars/ 1963

WDABB 5---1 12 15 cerv 4 cases, systemati mycosis fletch,al; anders 1969

WIDIA 43--- 1 233 cerv diseases of, bibliography karstad,1, ed 1964

WIDIA 52--- 1 114 cerv dis, bibliogr supplement 1 karstad,1 1969

CODEN VO-NU BEPA ENPA ANIM KEY WORDS-----				AUTHORS-----	YEAR
AGVIA	41--3	259	266	od-- mult epizoo haemorr diseas	boorman,j; gibbs, 1973
AJHEA	51--5	717	722	od-- brucellosis, leptospirosis	ferris,dh; hanson/ 1961
AJPAA	70--3	379	400	od-- pathogenesis, epizoo hemor	tsai,k-s; karstad 1973
AJVRA	18-66	162	166	od-- vesicular stomatitis	in de karstad,l; hanson 1957
AJVRA	22-86	109	116	od-- electr micros, anaplasma	m ristic,m; watrach 1961
AJVRA	23-92	21	23	od-- doca, transm anaplas,	tick osebold,jw; doug/ 1962
AJVRA	28---	599	600	od-- anaplasma, sier nevad, cal	christensen,jf m 1967
AJVRA	35--6	817	819	od-- propagat epiz hem dis,	avi hoff,gl; spalati/ 1974
ANYAA	241--	594	604	od-- sickling phenomena of deer	taylor,wj; easley 1974
ASMAC	72---	209	209	od-- quant, neutraliz, epi hemo	stim,tb; debbie,/ 1972
ASMAC	74---	213	213	od-- dosh, isol blueton vir,	ep bando,bm 1974
AZATA	75---	1	39	od-- experiment feeding of deer	nichol,aa 1938
CAFGA	36--1	19	20	od-- papilloma, skin tumors,	de herman,cm; bischo 1950
CAFGA	47--3	293	300	od-- abscess, corynebacterium	p rosen,mn; holden, 1961
CAFGA	58--2	141	144	od-- rabies in a deer	cappucci,dt,jr; l 1972
CJCMA	35--3	187	191	od-- bluetongue virus, comparas	thomas,fc; traine 1971
CNREA	31-10	1373	1375	od-- pulmonary fibroblastomas	i koller,ld; olson, 1971
CNVJA	3---3	71	78	od-- cul, ser evi, lepto,	ontar abdulla,pk; kars/ 1961
COVEA	49--1	97	115	od-- latent anaplasma infection	osebold,jw; chri/ 1959
CVTJA	24--1	42	42	od-- traumatic splenitis	in a d kapur,mp; sadana, 1976
DABBB	33B-3	1165	1165	od-- cell-virus inter, char epi	tsai,k-s 1972
DABBB	36B-8	3806	3806	od-- study vasc lesions catarrh	clark,ka 1976
DABBB	39B--	5250	5250	od-- characteriz, virus epiz he	willis,ng 1979
IJAHA	14--2	135	136	od-- tuberculosis in captive de	basak,dk; chatte/ 1975
INFIB	8---3	463	474	od-- ultrast char genome	epizoo tsai,k-s; karstad 1973
IVEJA	54--5	409	410	od-- pasteurella multocida infe	srinivasan,va; v/ 1977
				od-- continued on the next page	

CODEN	VO-NU BEPA ENPA ANIM KEY WORDS-----	AUTHORS-----	YEAR
JAVMA	91---2186	192 od-- pseudotuberculosis of deer	hammersland,h; jo 1937
JAVMA	98--- 129	131 od-- caseous lymphadenitis	seghetti,l mcken 1941
JAVMA	99--- 54	54 od-- paratyphoid, fawn, n carol	gauger,hc; gordon 1941
JAVMA	112-- 337	337 od-- foot-mouth dis, wildl, cal	anonymous 1948
JAVMA	130-- 513	514 od-- leptospir, brucello titers	wedman,ee; driver 1957
JAVMA	132-7 289	292 od-- infect, antibody, anaplasma	christensen,jf; / 1958
JAVMA	132-7 293	296 od-- serol surv, leptospi, mass	reynolds,im; smit 1958
JAVMA	136-9 426	427 od-- latent anaplasma marg infe	christensen,jf; / 1960
JAVMA	139-8 892	896 od-- inves, brucel, leptospi, illi	ferris,dh; hanson/ 1961
JAVMA	147-- 1096	1098 od-- brain tumors (ependymomas)	kradel,dc; dunne, 1965
JAVMA	167-7 565	568 od-- surv, toxoplasma antibodie	franti,ce; conno/ 1975
JAVMA	169-9 975	979 od-- necropsy, lab findin, free	reed,de; shave,h/ 1976
JAVMA	175-9 914	915 od-- obs on diag test, paratube	temple,rms; musc/ 1979
JCVPA	87--3 345	352 od-- epiz haemorr dis, tis cult	lawman,mjp; gibb/ 1977
JIDEA	58--5 366	368 od-- doca, trans of warts, host	koller,ld; olson, 1972
JOPAA	29--1 80	80 od-- corynebacterium, louse fly	steinhaus,ea 1943
JWIDA	6---4 479	482 od-- sero ev, arbovir, wis, tex	issel,cj; hoff,g/ 1970
JWIDA	8---1 72	74 od-- obs on malignant catarrhal	clark,ka; robins/ 1972
JWIDA	13--2 184	190 od-- dermatoph-congol enzoo,	ny gordon,ma; salki/ 1977
JWMAA	8---3 247	250 od-- contag panophthalmitis, wy	rosenfeld,i; beat 1944
JWMAA	15--2 216	220 od-- disease, winter mortal, ny	cheatum,el 1951
JWMAA	24--1 44	52 od-- leptos, bruc ser reac, wis	trainer,do; hanson 1960
JWMAA	28--2 377	381 od-- epizootic hemorrhagic dise	trainer,do 1964
JWMAA	30--4 777	780 od-- serol stud, epiz hemorrhag	d wilhelm,ar; train 1966
LANCA	2---- 1374	1375 od-- ruptured psoas in deer	thrower,wr 1972
MMLRA	4---3 75	78 od-- mortality in deer	mcdiarmid,a 1974
NAWTA	3---- 886	889 od-- malignant edema in deer	mckenney,fd 1938
NAWTA	10--- 242	246 od-- dee, domes livest par, dis	herman,cm 1945
NAWTA	16--- 164	178 od-- epizootic, foot rot, calif	rosen,mn;/ 1951
NAWTA	21--- 173	184 od-- epizootic in deer in michi	fay,ld; boyce,ap/ 1956
NAWTA	23--- 133	136 od-- southeast coop diseas stud	hayes,fa; greer,/ 1958
NAWTA	29--- 196	201 od-- virus, epizo hemorrhag dis	ditchfield,j; de/ 1964
NAWTA	30--- 196	205 od-- pathogen, viral hemorrhagi	debbie,jg; rowse/ 1965
NAWTA	32--- 381	386 od-- epizootiology, hemorrhagic	shape,re 1967
NEZTA	27--3 55	55 od-- diseases of deer	mcallum,h 1979
NEZTA	27--8 151	151 od-- tuberculosis in deer	hellstrom,j 1979
PCGFA	11--- 1	18 od-- se cooperative od dis stud	greer,we; shotts/ 1957
PIAIA	74--- 78	86 od-- incid, dis antibodie, iowa	haugen,ao 1968
			od-- continued on the next page

CODEN VO-NU BEPA ENPA ANIM KEY WORDS-----				AUTHORS-----	YEAR
PSEBA	88--4	533	535	od-- an infectious fibroma of d shope,re	1955
SAGCA	25--1	2	2	od-- fall deaths, acorn toxin kradel,dc	1977
VETRA	93--4	98	100	od-- low incid leptospirosis, b twigg,gi; hughes/	1973
VIWIA	7---1	15	18	od-- tumors of deer quortrup,er	1946
VTPHA	14--6	643	647	od-- glioma, rhabdomyosa, brain holscher,ma; pag/	1977
WDABB	1---3	31	32	od-- anitibod, myxovirus parasi shah,kv; schalle/	1965
WDABB	5---1	3	7	od-- exper expos, calif encepha cook,rs; trainer,	1969
WDABB	5---3	174	181	od-- leptospiros, illinois herd andrews,r	1969
WDABB	5---3	295	296	od-- chronic tox hepatit, louis seger,cl; newsom/	1969
WSCBA	4---2	31	32	od-- epithelial papillomas in d chaddock,tt	1939

CODEN VO-NU BEPA ENPA ANIM KEWO-----				AUTHORS-----	YEAR
AJEPA	96--5	379	382	odvi exp infect venez equine en hoff,gl; trainer,	1972
AJHEA	63--3	201	203	odvi wildlife, monitors, diseas trainer,dd	1973
AJPAA	66---	30A	31A	odvi vascul chang, epizo hemorrh tsai,ks; karstad,	1972
AJTHA	22--3	414	417	odvi isol jamestown canyon virus issel,cj	1973
AJVRA	20-78	925	926	odvi experimental brucellosis youatt,wg; fay,ld	1959
AJVRA	22-86	104	108	odvi epizoo hemorrhag dis, s dak pirtle,ec; layton	1961
AJVRA	31--2	271	278	odvi bluetongue virus, w-t deer thomas,fc; traine	1970
AJVRA	33-12	2545	2549	odvi blood serum, erysipelothri sikes,d; kistner/	1972
AJVRA	37--7	837	840	odvi viral particl, malig catar clark,ka; adams,l	1976
AJVRA	38--3	361	364	odvi isola, hemorrhag dis virus fosberg,sa; stau/	1977
APAVD	1978	169	169	odvi vit e, selen, white muscle ullrey,de; brady,	1979
AUVJA	51--4	174	177	odvi bluetongue-like disease of frank,jf; willis,	1975
CJCMA	35--3	224	229	odvi pathogen, exp epizo hemorrh fletch,al; karsta	1971
CNJMA	32--1	382	387	odvi experim bluetongue disease vosdingh,ra; tra/	1968
CNJMA	32--1	388	391	odvi staphylococcal arthritis sikes,d; hayes,f/	1968
CNVJA	8--11	247	254	odvi histopath, exp bluetongue karstad,l; traine	1968
CNVJA	14--5	106	109	odvi dis resemblin catarr fever wobeser,g; majka/	1973
CNVJA	20-11	323	325	odvi polioencephalomalacia in w wobeser,g; runge,	1979

odvi continued on the next page

CODEN VO-NU BEPA ENPA ANIM KEY WORDS-----				AUTHORS-----	YEAR
CNREA 31-10 1373	1375	odvi pulmonary fibroblastomas		koller,ld; olson,	1971
CNSVA 16--2 15	15	odvi streptothricosis, dee, man	dean,dj		1961
COVEA 33--4 323	332	odvi some diseases, minnesota		fenstermacher,r;/	1943
COVEA 45--4 538	547	odvi degenerative myopathy		hadlow,wj	1955
COVEA 50--3 236	250	odvi experim infect, leptospira	ferris,dh; hanson/	1960	
COVEA 52--1 94	98	odvi leptospirosis in the w-t d	reilly,jr; muras/	1962	
DABBB 31B-- 6785	6785	odvi blue tongue virus, pt 1, 2	thomas,fc		1971
DABBB 34B-6 3000	3001	odvi studies with arboviruses,	issel,cj		1973
JANSA 32--5 1037	1041	odvi rata, atherosclerosis in r	wiggers,kd; jaco/		1971
JAVMA 133-7 359	361	odvi surv, brucel, leptosp, sou	shotts,eb; greer/		1958
JAVMA 137-3 190	191	odvi serol stud, brucel, southe	hayes,fa gerard/		1960
JAVMA 140-1 53	57	odvi experim leptospiros infect	reilly,jr; muras/		1962
JAVMA 157-5 633	635	odvi cutaneous streptothricosis	kistner,tp; shot/		1970
JAVMA 159-5 605	610	odvi malignant catarrhal fever	wyand,ds; helmbo/		1971
JAVMA 167-7 571	573	odvi dermatophilus, alternaria	salkin,if; gordo/		1975
JAVMA 169-9 971	974	odvi myopathy, myoglobinuria in	wobeser,g; bella/		1976
JEMEA 108-6 797	802	odvi infectious cutaneo fibroma	shope,re; mangol/		1958
JEMEA 111-2 155	170	odvi virus-indu epizo hemor	dis shope,re; macnam/		1960
JIDIA 108-3 278	286	odvi experimental leptospirosis	trainer,do,jr; k/		1961
JNYEA 85--4 217	220	odvi epizo, bovin babesias, tex	hourigan,jl		1977
JOMAA 37--4 552	554	odvi lymphangioma, w-tailed dee	chute,hl; chamber		1956
JOPAA 57--3 657	659	odvi fail boophil, trans anapla	kuttler,kl; grah/		1971
JWIDA 6---4 226	228	odvi anthrax epizootic, w-t dee	kellogg,fe; pres/		1970
JWIDA 6---4 295	298	odvi leptospiral antibo, se usa	shotts,eb,jr; hay		1970
JWIDA 6---4 384	388	odvi bluetongue vir 1, preg dee	thomas,fc; traine		1970
JWIDA 6---4 389	396	odvi salmonellosis, w-t d fawns	robinson,rm; hid/		1970
JWIDA 6---4 397	401	odvi use wildl, monitor zoonose	trainer,dd		1970
JWIDA 6---4 488	493	odvi surv, stomatitis vir antib	jenney,ew; hayes/		1970
JWIDA 7---1 52	56	odvi aspergillos, renal oxalosi	wyand,ds langhe/		1971
JWIDA 9---1 56	57	odvi caseous lymph adenitis	stauber,e; armst/		1973
JWIDA 9---3 245	248	odvi infec calif arbovir, texas	issel,cj; hoff,g/		1973
JWIDA 10--1 25	31	odvi bluetongue, epizoo hemorrh	hoff,gl; trainer,		1974
JWIDA 10--1 34	38	odvi subcutaneous mycotic infec	salkin,if; stone,		1974
JWIDA 10--2 158	163	odvi blueton vir, enzootic, tex	hoff,gl; trainer/		1974
JWIDA 10--3 187	189	odvi id virus, 1971 hemorrhag	di thomas,fc; willi/		1974
JWIDA 10--3 217	224	odvi 1971 hemorrhag dis, se u s	prestwood,a; /		1974

odvi continued on the next page

CODEN VO-NU BEPA ENPA ANIM KEY WORDS----- AUTHORS----- YEAR

JWIDA 11--1 62	65	odvi ossifying fibroma, ear tag roscoe,de; veikl/	1975
JWIDA 11--1 116	121	odvi alal, arthropathy in white wobeser,g; runge,	1975
JWIDA 11--2 177	186	odvi hemorrhagic dis, kentucky roughton,rd	1975
JWIDA 11--2 195	200	odvi serol,venez eq enceph, tex smart,d1 traine/	1975
JWIDA 11--3 398	401	odvi dermatophilosi, twin fawns roscoe,de; lund,/	1975
JWIDA 11--4 508	515	odvi exp infect, rinderpest vir hamdy,fm; dardir/	1975
JWIDA 11--4 552	553	odvi presumpti paratuberculosis libke/kg; walton,	1975
JWIDA 12--2 143	147	odvi visual defcts, 6 case rpts howard,dr; krehb/	1976
JWIDA 12--3 306	309	odvi prev renal urolithias, cap woolf,a; kradel,/	1976
JWIDA 12--3 396	401	odvi hepatic fatty cirrhos, tex blankenship,lh; /	1976
JWIDA 12--4 516	522	odvi infec peste-des-petits rum hamdy,fm; dardiri	1976
JWIDA 13--1 9	16	odvi trans hemorrhag dis, culic foster,nm; breck/	1977
JWIDA 13--2 184	190	odvi dermatophilus dermatit, ny gordon,ma; salki/	1977
JWIDA 13--3 281	285	odvi occur rumenitis in sup fed woolf,a; kradel,d	1977
JWIDA 13--3 297	299	odvi fibro sarcoma in a w-t dee elwell,mr; burge/	1977
JWIDA 16--1 19	24	odvi w-t deer reservior brucell boeer,wj; crawfo/	1980
JWMAA 11--1 91	94	odvi actinomycosis, minnesota cass,js	1947
JWMAA 11--4 317	323	odvi die-offs, edwards pla, tex	
JWMAA 15--2 216	220	odvi disease, winter mortal, ny cheatum,el	1951
JWMAA 19--2 320	321	odvi surv, brucellosis, missour steen,mo; brohn,/	1955
JWMAA 22--2 203	204	odvi granular venereal disease helmboldt,cf; mcd	1958
JWMAA 23--3 345	348	odvi brucellosis, leptosp, mich youatt,wg; fay,l/	1959
JWMAA 26--1 27	31	odvi experim stud, brucellosis baker,mf; dills,/	1962
JWMAA 28--1 35	41	odvi leptosp reac rates, illino ferris,dh; verts,	1964
JWMAA 35--4 850	852	odvi sarcoma in an aged w-t dee kistner,tp; hayes	1971
JWMAA 37--3 331	335	odvi epizo hemorrhag dis, n dak hoff,gl; richard/	1973
NAWTA 4---- 244	249	odvi prevalenc, dis, para, mich whitlock,sc	1939
NAWTA 26--- 203	211	odvi odhe, curr status, brucell fay,ld	1961
NEZTA 20-10 194	195	odvi pleurisy, pericarditis in andrews,jrh	1972
NFGJA 10--1 118	123	odvi tuberculosis in a wild dee friend,m; kroll,/	1963
NFGJA 19--1 92	97	odvi dermatoph cutane streptoth stone,wb	1972
NFGJA 19--2 184	184	odvi anoth case, dermatophilosi stone,wb	1972
NFGJA 25--1 1	15	odvi mortility, fawns, seneca a opezio,jp	1978
PAVEA 5---- 164	173	odvi spontane bluetongue, texas stair,el; robins/	1968
PCGFA 12--- 206	208	odvi surv brucell, leptospi, se shotts,eb; greer/	1958
SABOA 13--3 329	333	odvi phoma peyronellae,zoo path gordon,ma; salki/	1975
SBJOD 1---2 61	61	odvi fibroma skin tumors,kentuc heuer,de; harley/	1975
TNWSD 33--- 35	44	odvi 1975, hemorrhagic dise, nj mcconnell,pa; lu/	1976
VTPHA 15--1 133	135	odvi thalamic ependymoma in a w nettles,vf; vande	1978
		odvi continued on the next page	

CODEN VO-NU BEPA ENPA ANIM KEY WORDS----- AUTHORS----- YEAR

WDABB 1---3 35 35 odvi mastitis, wild w-tail deer evans,w; friend, 1965
WDABB 3---1 38 39 odvi lymphosarcoma in a w-t dee debie,jg; friend, 1967
WDABB 3---3 98 101 odvi listeria monocytoge, feces mccrum,mw; evela/ 1967
WDABB 3---3 102 104 odvi skin tumors, new york deer friend,m 1967
WDABB 3---4 152 155 odvi chlamydia antibody study debbie,jg 1967
WDABB 4---1 12 12 odvi salmonella, captive fawns debbie,jg 1968
WDABB 5---2 68 72 odvi meth, leptospi surv, ontar kingscote,bf 1969
WDABB 6---4 226 228 odvi anthrax epizootic, w-t dee kellog,fe; prest/ 1970
WDABB 6---4 295 298 odvi leptospiral antibodies, us shotts,eb,jr; hay 1970
WDABB 6---4 384 388 odvi bluetongue vir, pregnan de thomas,fc; traine 1970

CODEN VO-NU BEPA ENPA ANIM KEY WORDS----- AUTHORS----- YEAR

AJVRA 35--4 523 525 odhe exp trans malig catarr,col pierson,re; stor/ 1974
AJVRA 38--3 411 412 odhe nonleth exp inocu, hemorrh stauber,eh; farr/ 1977

CAFGA 20--3 181 282 odhe life hist, food hab, calif dixon,js 1934
CAFGA 58--2 141 144 odhe rabies in a deer, californ cappucci,dt,jr; 1 1972

CELLB 9---3 489 494 odhe endogenou type c rna virus aaronson,sa; tro/ 1976

JAVMA 169-9 937 938 odhe fetal macer, suppur metrit stauber,eh; olso/ 1976
JAVMA 170-3 334 339 odhe eval, anaplas carrier, uta rensshaw,hw; vaug/ 1977

JOMAA 36--2 308 310 odhe "parrot mouth", rocky mt robinette,wl; ald 1955

JWIDA 9---4 314 319 odhe epizoo studies anaplasm, o peterson,kj; kis/ 1973
JWIDA 10--1 74 76 odhe dermato mycosis, alberta chalmers,ga; barr 1974
JWIDA 10--2 166 169 odhe investigation, tansy ragwo dean,re; winward, 1974
JWIDA 11--1 101 106 odhe testicular atrophy in cali demartini,jc; con 1975
JWIDA 12--3 427 434 odhe card agglut test, anaplasm howarth,ja; hoka/ 1976
JWIDA 12--3 459 463 odhe tularemia in a mule deer emmons,rw; ruski/ 1976
JWIDA 16--1 89 98 odhe wasting disease, encephalo williams,es; youn 1980

JWMAA 3---4 360 360 odhe large fibroma, head, neck honess,rf 1939
JWMAA 35--2 205 209 odhe diarrhea capt fawns, esche kramer,tt; nagy,/ 1971

NAVEA 23--1 34 36 odhe hemorrhagic septicem, utah quortrup,er 1942

SCIEA 91--- 168 168 odhe anaplasmosis, deer, calif boynton,wh; woods 1940

WDABB 4---4 143 143 odhe phenylketonuria, mule deer studier,eh; ewing 1968

CODEN VO-NU BEPA ENPA ANIM KEY WORDS-----			AUTHORS-----	YEAR	
AJVRA 37--5	615	617	ceel survey of anaplasmosis, id vaughn,hw; rensh/	1976	
APAVD 1977-	166	176	ceel capture myopathy in elk	haigh,jc	1977
AVCSA 18--2	159	167	ceel lens lesions in the elk	kronevi,t; holmb/	1977
BVJOA 116-6	284	287	ceel louping ill, virus, scotla dunn,am		1960
BVJOA 120-7	311	321	ceel enzootic ataxia of red deer terlecki,s: done/		1964
BVJOA 129-1	73	78	ceel enzyme change, cns, ataxic robinson,n		1973
COVEA 69--4	402	410	ceel eval anaplas card agg test magonigle,ra; eck		1979
JAVMA 171-9	927	932	ceel capture myopathy in elk in lewis,rj; chalme/		1977
JOMAA 13--4	371	372	ceel bang's disease, yellowston rush,wm		1932
JWIDA 6---2	144	48	ceel bluetongue virus, nor amer murray,jo; traine		1970
JWIDA 9---2	129	132	ceel exp infect, epizoo hemorrh hoff,gl; trainer,		1973
JWIDA 9---4	296	301	ceel reprod, dis, physiol blood vaughn,hw; knigh/		1973
JWIDA 11--3	330	334	ceel listeria-monocytog, roosev martyny,jw; botzl		1975
JWIDA 12--3	386	389	ceel yersinia, roosevlt, calif martyny,jw; botzl		1976
JWIDA 14--1	74	81	ceel brucellosis in elk, part 1 thorne,et; morto/		1978
JWIDA 14--3	280	291	ceel brucellosis, effects, tran thorne,et; morton		1978
JWIDA 15--2	303	306	ceel embryonal nephroma	snyder,sp; davie/	1979
JWIDA 15--2	307	308	ceel myxosarcoma in a wapiti	snyder,sp; davies	1979
JWIDA 15--3	379	386	ceel eval anaplas card agg test renshaw,hw; mago/		1979
JWIDA 15--4	529	532	ceel yersinia, soil, infec ran botzler,rg		1979
JWMAA 15--3	284	287	ceel actino, osteogenic sarcoma drake,ch		1951
NEZTA 26--5	130	131	ceel salmonellosis, dee, calves mcallum,hjf; fam/		1978
NZJSA 9---2	399	408	ceel brucel, lept, salmo, n ze daniel,mj		1966
VETRA 88-23	616	617	ceel tuberculos, atypic mycobac hime,jm; keymer,/		1971
VETRA 100-9	187	187	ceel bovine viru diarr antibody mcmartin,da; sno/		1977
VETRA 102--	484	485	ceel exper challenge, mycobacte orr,mb; hunter,a/		1978
VETRA 104-6	120	123	ceel outbreak mal catarrhal fev reid,hw; buxton,/		1979
VETRA 105--	574	576	ceel exper pneumonia, ovine chl mcmartin,da; hun/		1979

CODEN VO-NU BEPA ENPA ANIM KEY WORDS-----			AUTHORS-----	YEAR
AJPAA 15--4	445	454	alal encephalitis, maine, minne king,ls	1939
AJTHA 22--5	654	661	alal rata, arbovi, serol,finlnd brummer-korvenkon	1973
AVCSA 18--2	287	289	alal "inclusion-body-like" conf villar,ja; rehbin	1977
CAFNA 91--1	94	95	alal trauma induc paralys, calf chalmers,ga; barr	1977
alal continued on the next page				

CODEN VO-NU BEPA ENPA ANIM KEY WORDS-----				AUTHORS-----	YEAR
CNJMA 22--1 9	20	alal brucellos, elk isl, albert corner,ah; connel			1958
CNJMA 22--7 244	248	alal moose "sickness", nov scot benson,da			1958
CNJMA 22--8 282	286	alal moose "sickness" n scot II benson,da			1958
COVEA 32--3 241	254	alal further stud, disease, III fenstermacher,r;			1942
JAVMA 171-9 924	926	alal capture myopathy in a moos haigh,jc; stewart/			1977
JIDIA 136-2 312	316	alal rata, brucel, 1965-74, usa fox,md; kaufmann,			1977
JOMAA 39--1 139	145	alal paras, dis, wells gray her ritcey,rw; edward			1958
JWIDA 8---1 95	98	alal fatality, range overextens miller,f1; broug/			1972
JWIDA 11--2 116	121	alal odvi, arthropathy wobeser,g; runge,			1975
JWMAA 17--2 217	218	alal brucellosis in a moose jellison,wl; fis/			1953
JWMAA 24--1 44	52	alal narcosis, moose, nicotine rausch,ra; ritcey			1961
JWMAA 38--1 42	46	alal parelaphostrongylus tenuis gilbert,ff			1974
NCANA 101-- 23	50	alal infect, parasi dis, n amer anderson,rc; lank			1974
WDABB 3---4 183	184	alal johne's disease in a moose soltys,ma; andre/			1967

CODEN VO-NU BEPA ENPA ANIM KEY WORDS-----				AUTHORS-----	YEAR
AEHLA 25--4 246	252	rata obser, natural-focal zoono rausch,rl			1972
AJTHA 22--3 400	403	rata doca, arboviruses in finla saikku,p			1973
APAVD 1976. 40	44	rata systemic mycosis, rein her kennedy,s; monta/			1976
AVCSA 14--2 292	300	rata struc reind cornea, kerati winqvist,g; rehbi			1973
AVCSA 17--1 107	108	rata isolation of neisseria ovi kummeneje,k			1976
AVCSA 17--4 488	494	rata pasteurellosis in reindeer kummeneje,k			1976
AVCSA 18--1 54	64	rata keratitis in reindeer, bac rehbinder,c; glat			1977
AVCSA 18--1 65	74	rata keratitis in reindeer, myc rehbinder,c			1977
AVCSA 19--1 129	132	rata cutan malig lymphome, immu kummeneje,k; popp			1978
AVSPA 66--1 1	27	rata clin epizoot studies kerat rehbinder,c			1977
BJDEA 99--6 647	654	rata obmo, parapoxvir infection falk,es			1978
BPURD 1---- 498	506	rata q fever and alaska caribou hopla,ce			1975
CJMIA 24--2 129	135	rata brucellosis, inoc experime rausch,rl; huntle			1978
CJPEA 64--1 82	82	rata clin lab, epidem brucellos brazeau,m; kien,/			1973
rata continued on the next page					

CODEN VO-NU BEPA ENPA ANIM KEY WORDS-----				AUTHORS-----	YEAR
CJZOA 36--5 819	835	rata entodiiniinae, canad arcti lubinsky,g			1958
CJZOA 36--6 937	959	rata diplodiniinae, canad arcti lubinsky,g			1958
CJZOA 48--5 1023	1027	rata brucellos, reinde, ba gr c broughton,e; cho/			1970
FPWTA 33--- 30	39	rata dis condit, parasi, bar gr broughton,e; chou			1969
JAVMA 175-9 996	998	rata osteomyelitis, arthritis i haigh,jc; pharr,/			1979
JWIDA 6---3 136	139	rata rangif brucell, alask cani neiland,ka			1970
JWIDA 6---4 483	487	rata isol bunyamwera group arbo hoff,gl; stalati/			1970
JWIDA 8---2 138	140	rata cutan fibr papill, bg cari broughton,e; mil/			1972
JWIDA 11--1 45	53	rata rangiferine brucell, alask neiland,ka			1975
JWIDA 11--4 465	470	rata radiog exam, mandib lesion miller,f1; cawle/			1975
JWIDA 15--2 309	318	rata mandibular lesions, alaska doerr,jg; dieteri			1979
JWIDA 15--3 433	435	rata arterial disease, alaska dieterich,ra; lui			1979
JZAMD 10--1 31	34	rata clostridial myositis	herron,aj; garma/		1979
NOVTA 25--4 196	202	rata clostrid perfringens enter kummeneje,k; bakk			1973
NOVTA 26--7 456	458	rata encephal, neuritis, calves kummeneje,k			1974
VETRA 105-3 60	61	rata contagious ecthyma, reindeer kummeneje,k; krog			1979
WDABB 4---4 227	236	rata brucellos, caribou, alaska neiland,ka; king/			1968
WDABB 6---4 483	487	rata isolatio, arbovirus, carib hoff,gl; spalati/			1970
ZEVMA 25A-1 48	56	rata keratitis, proced sim sola offosson,a; rehb/			1978
ZEVMA 25A-2 89	109	rata keratitis, induced in mice rehbinder,c; moe/			1978
ZEVMA 25A-2 110	128	rata keratitis, experim induced rehbinder,c; glat			1978
ZOGAA 37... 134	142	rata reticulo sarcoma, reindeer beyer,j; kronberg			19
CODEN VO-NU BEPA ENPA ANIM KEY WORDS-----				AUTHORS-----	YEAR
AJVRA 33--5 1013	1016	anam bluetongue virus, pronghor hoff,gl; trainer,			1972
APAVD 1972- 15	16	anam frostbite in antelope horn simmons,lg			1972
CNVJA 16--1 3	9	anam odvi, necrobacillosis, sas wobeser,g; runge/			1975
JAVMA 171-9 918	923	anam capture myopathy in canada chalmers,ga; barr			1977
JWIDA 8---1 67	71	anam caseous lymph adenitis, pr clark,ka; robins/			1972
JWIDA 10--1 60	62	anam infectious pododermatitis chalmers,ga; barr			1974
JWIDA 12--3 347	348	anam rabies in a pronghorn ante wempe,jm			1976
JWIDA 12--4 488	491	anam reovirus, neo-nat diarrhea reed,de; daley,c/			1976
JWIDA 13--3 323	326	anam anaplasmo reservio, mantan jacobson,rh; wor/			1977

anam continued on the next page

CODEN VO-NU BEPA ENPA ANIM KEY WORDS----- AUTHORS----- YEAR

JWMAA 30--3 488 496 anam pronghorn die-off, texas hailey,tl; thoma/ 1966
JWMAA 33--4 1032 1033 anam clostridium, hand-rear ant nagy,jg barber,/ 1969

TAEPA 3011- 1 15 anam hard yellow liver dis, rum dollahite,jw; oh/ 1971
TAEPA 3460- 1 57 anam hard yel liv fatty cirrhos bailey,em,,jr; u/ 1977

TAMSA 63--1 27 29 anam selenomonas, new, calif an chattin,je; herm/ 1944

XAGCA 154-- 1 10 anam bibi, doca, anaplasmosis stiles,gw 1939

ZTMPA 24--2 192 197 anam game anaplasmosis: isolati lohr,kf; meyer,h 1973

CODEN VO-NU BEPA ENPA ANIM KEY WORDS----- AUTHORS----- YEAR

AJVRA 38--8 1183 1185 bibi demo of bacteriocin activi chengappa,mm; car 1977

CAFNA 86--2 127 132 bibi parasites, diseases, canad choquette,lpe; b/ 1972

CNJMA 22--1 9 20 bibi brucellos, elk isl, albert corner,ah; connel 1958

CNVJA 2---5 168 174 bibi tubercul, wood buf nat'l, choquette,lpe; g/ 1961

JAVMA 100-- 19 22 bibi tuberculosis in the buffal hadwen,s 1942
JAVMA 171-9 913 917 bibi malignant catarrhal fever ruth,gr; reed,de/ 1977

JOMAA 13--4 371 372 bibi bang's disease, yellowston rush,wm 1932

JWIDA 11--3 395 397 bibi absence, anaplasma infecti peterson,kj; roby 1975
JWIDA 14--3 329 332 bibi serol surv brucell, canada choquette,lpe; b/ 1978

NAWTA 28--- 233 239 bibi paras, dis, anthrax, canad novakowski,ns; c/ 1963

WDABB 5---3 206 207 bibi septicemic pasteurellosis heddleston,kl; ga 1969

WMBAA 16--- 1 52 bibi biol, mngt, wood buf na pk fuller,wa 1966

CODEN VO-NU BEPA ENPA ANIM KEY WORDS----- AUTHORS----- YEAR

JAVMA 157-- 1507 1511 ov selenium-responsive diseas muth,oh 1970

CODEN VO-NU BEPA ENPA ANIM KEY WORDS----- AUTHORS----- YEAR

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CODEN VO-NU BEPA ENPA ANIM KEY WORDS----- AUTHORS----- YEAR

AJVRA 33--1 87 90 ovca id, char, mycoplasma-argin al-aubaidi,jm; t/ 1972
 CJZOA 51--5 479 482 ovca stress, lympho stim, phyto hudson,rj 1973
 JAVMA 161-6 669 672 ovca parainflu 3 virus, rocky m parks,jb; post,g/ 1972
 JAVMA 173-9 1178 1180 ovca chronic frontal sinus, ost paul,sr; bunch,td 1978
 JNCIA 59--1 185 198 ovca neoplasia captive mammals effron,m; griner/ 1977
 JOMAA 18--1 105 106 ovca hemorrhag septic, rocky mt potts,mk 1937
 JWIDA 6---3 169 170 ovca mycoplas, pneumo, rocky mt woolf,a; kradel,/ 1970
 JWIDA 9---1 7 11 ovca electrophor, chron pneumon woolf,a; nadler,/ 1973
 JWIDA 9---1 12 17 ovca mortality, captive bighorn woolf,a; kradel,d 1973
 JWIDA 10--2 107 110 ovca serol survey, viral infect parks,jb; england 1974
 JWIDA 10--3 228 231 ovca vaccina trials, bluetongue robinson,rm; hai/ 1974
 JWIDA 11--1 26 31 ovca oram, contag ecthyma, can samuel,wm; chalm/ 1975
 JWIDA 15--2 221 227 ovca johne's disease, colorado williams,es; spr/ 1979
 JWIDA 15--4 499 503 ovca isolation, chlamydial agen pearson,hj; engla 1979
 JWMAA 31--1 165 168 ovca bluetongue, desert bighorn robinson,rm; hai/ 1967
 JWMAA 35--2 270 274 ovca contagious ecthyma, rocky m blood,da 1971
 NAWTA 3---3 893 897 ovca diseases, rocky mt nati pk potts,mk 1938
 WDABB 2---2 34 37 ovca myxovirus parainfluenza-3 howe,dl; woods,g/ 1966
 WDABB 3---2 74 76 ovca virus isola, lung, nemato forrester,dj; wad 1967
 WIDIA 23--- 1 14 ovca pasteurellosis, rocky mt post,g 1962

CODEN VO-NU BEPA ENPA ANIM KEY WORDS----- AUTHORS----- YEAR

AVCSA 19--3 461 462 obmo contagious ecthyma (orf) i kummeneje,k; krog 1978
 VTYMA 65-11 1063 1067 obmo corynebacter infect, domes beckley,jc; diete 1970

CODEN VO-NU BEPA ENPA ANIM KEY WORDS----- AUTHORS----- YEAR

JWIDA 13--2 135 136 oram contagious ecthyma, britis herbert,dm; samu/ 1977
 JWIDA 15--2 221 227 oram johne's disease, colorado williams,es; spr/ 1979
 JWMAA 35--4 752 756 oram white muscle disease herbert,dm; cowan 1971

CODEN VO-NU BEPA ENPA ANIM KEY WORDS----- AUTHORS----- YEAR

APAVD 1977- 136 145 many avian tuberc, cerv tub tes kollias,gv,jr 1977
 AUVJA 51--4 203 208 many epizootiology of bluetongu hourrigan,jl; kli 1975
 CNJMA 22--1 9 20 many brucellos, elk isl, albert corner,ah; connel 1958
 JANSA 32--5 1037 1041 many atherosclerosis in ruminan wiggers,kd; jaco/ 1971
 JIDIA 124-2 217 222 pathogen epiz hemorrh disea debbie,jg; abelse 1971
 JIDIA 136-2 312 316 many brucellosis in usa 1965-74 fox,md kaufmann, 1977
 JMENA 13--3 225 275 many diseas agents trans, flies krinsky,wl 1976
 JWIDA 13--1 74 79 many viruses, capt, free, alber thorsen,j; karst/ 1977
 JZAMD 7---4 5 7 many symp on mycobac infec, zoo montali,rj 1976
 NZJSA 10--4 949 963 many survey of diseases, new ze daniel,jm 1967
 SABOA 13--3 329 333 phoma (peyronellaea), zoop gordon,ma; salki/ 1975
 TAMSA 70--2 185 187 many selenomonas, calif mammals herman,cm; sayama 1951
 VETRA 94-24 559 559 many brucellosis in wildlife mcdiarmid,a; matt 1974
 VETRA 96-23 503 506 many manag deer, exp stud, foot gibbs,epj; mcdia/ 1975
 VETRA 99-20 398 398 many isolation rotavirus fr dee tzipori,s; caple/ 1976

CODEN VO-NU BEPA ENPA ANIM KEY WORDS----- AUTHORS----- YEAR

CBCPA 64A-3 411 418 dosh nature of erythro sickling butcher,pd; hawk1 1979
 JANSA 17--1 224 236 dosh doca, white muscle disease blinko,c; dye,wb 1958
 JONUA 99--3 331 337 dosh selenium def myopathic lam whanger,po; wesw/ 1969

CODEN VO-NU BEPA ENPA ANIM KEY WORDS----- AUTHORS----- YEAR

AJTHA 21--1 100 109 wld1 buttonwillow virus, califo hardy,jl; lyness/ 1972
 AMFOA 52... 24 26 biga when animals get sick rush,wm 1946
 CNVJA 19--5 139 139 wld1 brucellosis and wildlife hudson,m 1978
 DABBB 33B-7 3378 3379 wiru epizootiological study, vi hoff,gl 1973
 JNCIA 59--1 185 198 mamm nature, rate of neoplasia effron,m; griner/ 1977

continued on the next page

CODEN VO-NU BEPA ENPA ANIM KEY WORDS----- AUTHORS----- YEAR

JOHYA 81--2 189 196 windbrne bluetng, portugal sellers,rf; pedg/ 1978

JWIDA 13--- 74 79 wiru viruses from captive, free thorsen,j; karst/ 1977

JWIDA 14--3 351 354 rumi rotavirus infect, neonatal eugster,ak; stro/ 1978

NAWTA 12--- 520 523 biga the hoof and mouth disease broughton,ib 1947

WIDIA 42--- 1 6 ungu epizo hemorrhag dis, alber chalmers,ga; van/ 1964

CODEN VO-NU BEPA ENPA ANIM KEY WORDS----- AUTHORS----- YEAR

JAVMA 165-8 735 735 axax mycobacterium bovis infect sawa,tr; thoen,c/ 1974

JAVMA 165-- 998 999 axax mycobac bovis infec, hawai sawa,tr; thoen,c/ 1974

JAVMA 174-8 841 843 axax doca, dada, paratuberculosis riemann,h; zaman/ 1979

RVETA 29--3 126 130 axax polyarterit nodosa-like le neumann,f; nobel/ 1972

VETRA 98-26 525 526 axax tuberculosis, whipsnade pa jones,dm; manton/ 1976

CODEN VO-NU BEPA ENPA ANIM KEY WORDS----- AUTHORS----- YEAR

AVCSA 7---4 330 363 caca dis resemb paratuberculosis hillermark,k 1966

JCVPA 84--2 215 220 caca ceel, dada, foot-and-mouth forman,aj; gibbs, 1974

NOVTA 28-11 539 546 caca mycobacteriosis, caus pige joergensen, jb; cl 1976

VETRA 98--6 116 116 caca isolatio louping-ill virus reid,hw; barlow,/ 1976

VETRA 104-- 214 215 caca adenoma in british roe dee craig,wa 1979

CODEN VO-NU BEPA ENPA ANIM KEY WORDS----- AUTHORS----- YEAR

AJVRA 36--6 749 752 ceni in vivo erythrocy sickling parshall,cj,jr; / 1975
AJVRA 36--6 753 756 ceni ophthalmic manif, induc si vainisi,sj; pars/ 1975

JCVPA 85--3 361 366 ceni stud, foot-and-mouth disea gibbs,epj; herni/ 1975

CODEN VO-NU BEPA ENPA ANIM KEY WORDS----- AUTHORS----- YEAR

JAVMA 173-9 1243 1243 dada malig hyperthermia, etorpi pertz,c; sundberg 1978

JWIDA 15--2 299 301 dada adrenal cortical adenoma schmidt,re; flet/ 1979

VETRA 98--4 74 74 dada case of bovine tuberculosi wilson,p; harring 1976

VETRA 104-- 450 453 dada 4 cases of chondroystroph baker,jr; ashton/ 1979

VETRA 105-- 573 574 dada yersiniosis in free-living chapman,di; chap/ 1979

CODEN VO-NU BEPA ENPA ANIM KEWO----- AUTHORS----- YEAR

PZSLA 136-3 477 483 elda malig catarrh,pere david d tong,eh; senior,/ 1961

CODEN VO-NU BEPA ENPA ANIM KEY WORDS----- AUTHORS----- YEAR

ATRLA 12-30 445 452 bibo foot-and-mouth dis, poland podgurniak,z 1967

RVTS 26--2 165 171 bibo isol mal catarrhal fever v straver,pj; bekk/ 1979

CODEN VO-NU BEPA ENPA ANIM KEY WORDS----- AUTHORS----- YEAR

ASISA 29--- 535 535 ruru coronary arterioscl, free- guarda,f; cornagl 1976

UNIT 1.3: ABNORMALITIES

Abnormalities occur in wild species, but the frequencies of abnormal characteristics are not known. The basic principle that must operate is that abnormal individuals are less likely to live and reproduce than normal ones. This statement is based on the assumption that abnormalities are detrimental.

Some abnormalities are physical and easily recognized, such as abnormal antlers and dental anomalies. Some are physical but internal; fetal abnormalities are an example. Some are metabolic; a whitetail fawn at Cornell's Wildlife Ecology Laboratory had a severe calcium metabolism problem, mobilizing from the bones and excreting calcium with a concomitant loss of bone structure. The fawn died in a few days. Such a case would never survive in the wild, of course.

The number of references on abnormalities is small. Some of the cases described are curious instances, while others have physiological or genetic implications. The vast majority of abnormalities in wild ruminants go unnoticed.

REFERENCES, UNIT 1.3

ABNORMALITIES

SERIALS

CODEN VO-NU BEPA ENPA ANIM KEY WORDS----- AUTHORS----- YEAR
PCGFA 13... 174 177 od-- poisonous plants, s e dise hayes,fa; jenkins 1959

CODEN VO-NU BEPA ENPA ANIM KEY WORDS----- AUTHORS----- YEAR
COVEA 45--4 538 547 odvi degenerative myopathy hadlow,wj 1955
JCVPA 82--2 219 221 odvi intraocular lacrimal gland wyand,ds; lehav,/ 1972
JCVPA 87--4 557 568 odvi anophthalmia, microphthalm fulton,ab; alber/ 1977
JOMAA 48--4 674 676 odvi genital hypoplasia, w-t de marburger,rg; ro/ 1967
JWIDA 7---1 1 2 odvi ventral hernia in a w-t de wobeser,g; maclen 1971
JWIDA 8---4 311 314 odvi antler malform, leg injury marburger,rg; ro/ 1972
JWIDA 8---4 320 320 odvi scrotal hernia in a w-t de schlegel,mw; lee/ 1972
JWIDA 9---4 356 358 odvi multiple anomalies, fetus wobeser,g; runge, 1973
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