

## Supporting Information

### Text S1. Searches performed during the systematic review of reports on *Leptospira* serovar isolations and detections in animal host species, 9 March 2023

#### Databases:

Medline, Scopus, Web of Science, BIOSIS, CAB abstracts, Wildlife and ecology studies worldwide, Proquest Agricultural Science Collection, Zoological record, PubMed

Search as performed in Web of science: BIOSIS, Medline, Web of Science Core collection, Zoological record

| Search | Terms Used   |
|--------|--|
| 1      | TS=((Abramis) OR (Agogo) OR (Aguaruna) OR (Alexi) OR (Alice) OR (Altodouro) OR (Andamana) OR (Anhoa) OR (Arborea) OR (Arenal) OR (Argentinensis) OR (Atchafalaya) OR (Atlantae) OR (Australis) OR (Autumnalis) OR (Babudieri) OR (Bafani) OR (Bajan) OR (Bakeri) OR (Balboa) OR (Balcanica) OR (Ballum) OR (Bangkinang) OR (Banna) OR (Bataviae) OR (Benjamini) OR (Beye) OR (Biggis) OR (Bim) OR (Bindjei) OR (Birkini) OR (Bogvere) OR (Borincana) OR (Brasiliensis) OR (Bratislava) OR (Bravo) OR (Broomi) OR (Buenos Aires) OR (Bulgarica) OR (Butembo) OR (Camlo) OR (Canalzoneae) OR (Canicola) OR (Caribe) OR (Carimagua) OR (Carlos) OR (Castellonis) OR (Celledoni) OR (Ceylonica) OR (Chagres) OR (Claytoni) OR (Copenhageni) OR (Copenhageni) OR (Corredores) OR (Costa Rica) OR (Coxi) OR (Cristobali) OR (Cuica) OR (Cynopteri) OR (Dadas) OR (Dakota) OR (Darien) OR (Dehong) OR (Dikkeni) OR (Djasiman) OR (Djatzji) OR (Erinaceauriti) OR (Evansi) OR (Fluminense) OR (Fortbragg) OR (Fugis) OR (Galtoni) OR (Gatuni) OR (Gem) OR (Gengma) OR (Georgia) OR (Geyaweera) OR (Goiano) OR (Gorgas) OR (Grippytyphosa) OR (Guangdong) OR (Guaratuba) OR (Guaricura) OR (Guidae) OR (Gurungi) OR (Haemolytica) OR (Hainan) OR (Hamptoni) OR (Hardjo) OR (Hawain) OR (Hebdomadis) OR (Hekou) OR (Holland) OR (Hongchon) OR (Hualin) OR (Huallaga) OR (Huanuco) OR (Hurstbridge) OR (Icterohaemorrhagiae) OR (Istrica) OR (Jalna) OR (Javanica) OR (Jonsis) OR (Jules) OR (Kabura) OR (Kambale) OR (Kamituga) OR (Kanana) OR (Kaup) OR (Kenya) OR (Khorat) OR (Kisuba) OR (Kobbe) OR (Kremastos) OR (Kunming) OR (Kuwait) OR (Kwale) OR (Lai) OR (Lambwe) OR (Langati) OR (Lanka) OR (Lichuan) OR (Lincang) OR (Lora) OR (Losbanos) OR (Louisiana) OR (Luis) OR (Machiguenga) OR (Malaya) OR (Malaysia) OR (Mangus) OR (Manhao) OR (Manilae) OR (Mankarso) OR (Manzhuang) OR (Maru) OR (Medanensis) OR (Mengding) OR (Mengla) OR (Menglian) OR (Mengma) OR (Mengpeng) OR (Mengrun) OR (Menoni) OR (Mini) OR (Mogden) OR (Mooris) OR (Mozdok) OR (Muelleri) OR (Muenchen) OR (Mujunkumi) OR (Mwogolo) OR (Myocastoris) OR (Naam) OR (Nanla) OR (Navet) OR (Ndahambukuje) OR (Ndambari) OR (Nicaragua) OR (Nigeria) OR (Nona) OR (Nyanza) OR (Orleans) OR (Paidjan) OR (Panama) OR (Patoc) OR (Perameles) OR (Peru) OR (Peruviana) OR (Pina) OR (Pinchang) OR (Poi) OR (Polonica) OR (Pomona) OR (Portblairi) OR (Portlandvere) OR |

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|   | (Princetown) OR (Proechimys) OR (Pyrogenes) OR (Qingshui) OR (Rachmati) OR (Rama) OR (Ramisi) OR (Ranarum) OR (Ratnapura) OR (Recreo) OR (Ricardi) OR (Rio) OR (Rioja) OR (Robinsoni) OR (Roumanica) OR (Ruparupae) OR (Rushan) OR (Sanmartini) OR (Santarosa) OR (Saopaulo) OR (Sarmin) OR (Saxkoebing) OR (Schueffneri) OR (Sejroe) OR (Semaranga) OR (Sentot) OR (Shermani) OR (Sichuan) OR (Smithi) OR (Sofia) OR (Sokoine) OR (Sorexjalna) OR (Soteropolitana) OR (Srebarna) OR (Sulzerae) OR (Sumneri) OR (Szwajizak) OR (Tabaquite) OR (Tarassovi) OR (Tingomaria) OR (Tonkini) OR (Topaz) OR (Trinidad) OR (Tropica) OR (Tsaratsovo) OR (Tunis) OR (Valbuzzi) OR (Vanderhoedeni) OR (Varela) OR (Vargonicas) OR (Varillal) OR (Vughia) OR (Waskurin) OR (Weaveri) OR (Weerasinghe) OR (Whitcombi) OR (Wolffi) OR (Worsfoldi) OR (Yaan) OR (Yeonchon) OR (Yunnan) OR (Yunxian) OR (Zanoni) OR (Zhenkang) OR (Serovar) OR (Serogroup) OR (Serotype)) |
| 2 | TS=((Animal*) OR (mammal) OR (reptile) OR (bird) OR (avian) OR (amphibian))<br><br>Timespan=All years  |
| 3 | TS=Leptospir*<br><br>Timespan=All years  |
| 1 | 1 AND 2 AND 3  |

Search as performed in CAB abstracts

| Search | Search terms  |
|--------|---|
| 1      | <p>Leptospir* AND ((Animal*) OR (mammal) OR (reptile) OR (bird) OR (avian) OR (amphibian)) AND ((Abramis) OR (Agogo) OR (Aguaruna) OR (Alexi) OR (Alice) OR (Altodouro) OR (Andamana) OR (Anhoa) OR (Arborea) OR (Arenal) OR (Argentiniensis) OR (Atchafalaya) OR (Atlantae) OR (Australis) OR (Autumnalis) OR (Babudieri) OR (Bafani) OR (Bajan) OR (Bakeri) OR (Balboa) OR (Balcanica) OR (Ballum) OR (Bangkinang) OR (Banna) OR (Bataviae) OR (Benjamini) OR (Beye) OR (Biggis) OR (Bim) OR (Bindjei) OR (Birkinii) OR (Bogvere) OR (Borincana) OR (Brasiliensis) OR (Bratislava) OR (Bravo) OR (Broomii) OR (Buenos Aires) OR (Bulgarica) OR (Butembo) OR (Camlo) OR (Canalzonae) OR (Canicola) OR (Caribe) OR (Carimagua) OR (Carlos) OR (Castellonis) OR (Celledoni) OR (Ceylonica) OR (Chagres) OR (Claytoni) OR (Copenhageni) OR (Copenhageni) OR (Corredores) OR (Costa Rica) OR (Coxi) OR (Cristobali) OR (Cuica) OR (Cynopteri) OR (Dadas) OR (Dakota) OR (Darien) OR (Dehong) OR (Dikkeni) OR (Djasiman) OR (Djatzi) OR (Erinaceauriti) OR (Evansi) OR (Fluminense) OR (Fortbragg) OR (Fugis) OR (Galtoni) OR (Gatuni) OR (Gem) OR (Gengma) OR (Georgia) OR (Geyaweera) OR (Goiano) OR (Gorgas) OR (Grippotyphosa) OR (Guangdong) OR (Guaratuba) OR (Guaricura) OR (Guidae) OR (Gurungi) OR (Haemolytica) OR (Hainan) OR (Hamptoni) OR (Hardjo) OR (Hawain) OR (Hebdomadis) OR (Hekou) OR (Holland) OR (Hongchon) OR (Hualin) OR (Huallaga) OR (Huanuco) OR (Hurstbridge) OR (Icterohaemorrhagiae) OR (Istrica) OR (Jalna) OR (Javanica) OR (Jonsis) OR (Jules) OR (Kabura) OR (Kambale) OR (Kamituga) OR (Kanana) OR (Kaup) OR (Kenya) OR (Khorat) OR (Kisuba) OR (Kobbe) OR (Kremastos) OR (Kunming) OR (Kuwait) OR (Kwale) OR (Lai) OR (Lambwe) OR (Langati) OR (Lanka) OR (Lichuan) OR (Lincang) OR (Lora) OR (Losbanos) OR (Louisiana) OR (Luis) OR (Machiguenga) OR (Malaya) OR (Malaysia) OR (Mangus) OR (Manhao) OR (Manilae) OR (Mankarso) OR (Manzhuang) OR (Maru) OR (Medanensis) OR (Mengding) OR (Mengla) OR (Menglian) OR (Mengma) OR (Mengpeng) OR (Mengrun) OR (Menoni) OR (Mini) OR (Mogden) OR (Mooris) OR (Mozdok) OR (Muelleri) OR (Muenchen) OR (Mujunkumi) OR (Mwogolo) OR (Myocastoris) OR (Naam) OR (Nanla) OR (Navet) OR (Ndahambukuje) OR (Ndambari) OR (Nicaragua) OR (Nigeria) OR (Nona) OR (Nyanza) OR (Orleans) OR (Paidjan) OR (Panama) OR (Patoc) OR (Perameles) OR (Peru) OR (Peruviana) OR (Pina) OR (Pinchang) OR (Poi) OR (Polonica) OR (Pomona) OR (Portblairi) OR (Portlandvere) OR (Prinkestown) OR (Proechimys) OR (Pyrogenes) OR (Qingshui) OR (Rachmati) OR (Rama) OR (Ramisi) OR (Ranarum) OR (Ratnapura) OR (Recreo) OR (Ricardi) OR (Rio) OR (Rioja) OR (Robinsoni) OR (Roumanica) OR (Ruparupae) OR (Rushan) OR (Sanmartini) OR (Santarosa) OR (Saopaulo) OR (Sarmin) OR (Saxkoebing) OR (Schueffneri) OR (Sejroe) OR (Semaranga) OR (Sentot) OR (Shermani) OR (Sichuan) OR (Smithi) OR (Sofia) OR (Sokoine) OR (Sorexjalna) OR (Soteropolitana) OR (Srebarna) OR (Sulzeriae) OR (Sumneri) OR (Szwajizak) OR (Tabaquite) OR (Tarassovi) OR (Tingomaria) OR (Tonkini) OR</p> |

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| (Topaz) OR (Trinidad) OR (Tropica) OR (Tsaratsovo) OR (Tunis) OR (Valbuzzi) OR<br>(Vanderhoedeni) OR (Varela) OR (Vargonicas) OR (Varillal) OR (Vughia) OR (Waskurin) OR<br>(Weaveri) OR (Weerasinghe) OR (Whitcombi) OR (Wolffi) OR (Worsfoldi) OR (Yaan) OR<br>(Yeonchon) OR (Yunnan) OR (Yunxian) OR (Zanoni) OR (Zhenkang) OR (Serovar) OR<br>(Serogroup) OR (Serotype) |
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Search performed in Proquest Agricultural Science Collection

| Search | Search Terms  |
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| 1      | <p>((Abramis) OR (Agogo) OR (Aguaruna) OR (Alexi) OR (Alice) OR (Altodouro) OR (Andamana) OR (Anhoa) OR (Arborea) OR (Arenal) OR (Argentinensis) OR (Atchafalaya) OR (Atlantae) OR (Australis) OR (Autumnalis) OR (Babudieri) OR (Bafani) OR (Bajan) OR (Bakeri) OR (Balboa) OR (Balcanica) OR (Ballum) OR (Bangkinang) OR (Banna) OR (Bataviae) OR (Benjamini) OR (Beye) OR (Biggis) OR (Bim) OR (Bindjei) OR (Birkini) OR (Bogvere) OR (Borincana) OR (Brasiliensis) OR (Bratislava) OR (Bravo) OR (Broomi) OR (Buenos Aires) OR (Bulgarica) OR (Butembo) OR (Camlo) OR (Canalzonae) OR (Canicola) OR (Caribe) OR (Carimagua) OR (Carlos) OR (Castellonis) OR (Celledoni) OR (Ceylonica) OR (Chagres) OR (Claytoni) OR (Copenhageni) OR (Copenhageni) OR (Corredores) OR (Costa Rica) OR (Coxi) OR (Cristobali) OR (Cuica) OR (Cynopteri) OR (Dadas) OR (Dakota) OR (Darrien) OR (Dehong) OR (Dikkeni) OR (Djasiman) OR (Djatzi) OR (Erinaceiauriti) OR (Evansi) OR (Fluminense) OR (Fortbragg) OR (Fugis) OR (Galtoni) OR (Gatuni) OR (Gem) OR (Gengma) OR (Georgia) OR (Geyaweera) OR (Goiano) OR (Gorgas) OR (Grippotyphosa) OR (Guangdong) OR (Guaratuba) OR (Guaricura) OR (Guidae) OR (Gurungi) OR (Haemolytica) OR (Hainan) OR (Hamptoni) OR (Hardjo) OR (Hawain) OR (Hebdomadis) OR (Hekou) OR (Holland) OR (Hongchon) OR (Hualin) OR (Huallaga) OR (Huanuco) OR (Hurstbridge) OR (Icterohaemorrhagiae) OR (Istrica) OR (Jalna) OR (Javanica) OR (Jonsis) OR (Jules) OR (Kabura) OR (Kambale) OR (Kamituga) OR (Kanana) OR (Kaup) OR (Kenya) OR (Khorat) OR (Kisuba) OR (Kobbe) OR (Kremastos) OR (Kunming) OR (Kuwait) OR (Kwale) OR (Lai) OR (Lambwe) OR (Langati) OR (Lanka) OR (Lichuan) OR (Lincang) OR (Lora) OR (Losbanos) OR (Louisiana) OR (Luis) OR (Machiguenga) OR (Malaya) OR (Malaysia) OR (Mangus) OR (Manhao) OR (Manilae) OR (Mankarso) OR (Manzhuang) OR (Maru) OR (Medanensis) OR (Mengding) OR (Mengla) OR (Menglian) OR (Mengma) OR (Mengpeng) OR (Mengrun) OR (Menoni) OR (Mini) OR (Mogden) OR (Mooris) OR (Mozdok) OR (Muelleri) OR (Muenchen) OR (Mujunkumi) OR (Mwogolo) OR (Myocastoris) OR (Naam) OR (Nanla) OR (Navet) OR (Ndahambukuje) OR (Ndambari) OR (Nicaragua) OR (Nigeria) OR (Nona) OR (Nyanza) OR (Orleans) OR (Paidjan) OR (Panama) OR (Patoc) OR (Perameles) OR (Peru) OR (Peruviana) OR (Pina) OR (Pinchang) OR (Poi) OR (Polonica) OR (Pomona) OR (Portblairi) OR (Portlandvere) OR (Prinkestown) OR (Proechimys) OR (Pyrogenes) OR (Qingshui) OR (Rachmati) OR (Rama) OR (Ramisi) OR (Ranarum) OR (Ratnapura) OR (Recreo) OR (Ricardi) OR (Rio) OR (Rioja) OR (Robinsoni) OR (Roumanica) OR (Ruparupae) OR (Rushan) OR (Sanmartini) OR (Santarosa) OR (Saopaulo) OR (Sarmin) OR (Saxkoebing) OR (Schueffneri) OR (Sejroe) OR (Semaranga) OR (Sentot) OR (Shermani) OR (Sichuan) OR (Smithi) OR (Sofia) OR (Sokoine) OR (Sorexjalna) OR (Soteropolitana) OR (Srebarna) OR (Sulzeriae) OR (Sumneri) OR (Szwajizak) OR (Tabaquite) OR (Tarassovi) OR (Tingomaria) OR (Tonkini) OR (Topaz) OR (Trinidad) OR (Tropica) OR (Tsaratsovo) OR (Tunis) OR (Valbuzzi) OR (Vanderhoedeni) OR (Varela) OR (Vargonicas) OR (Varillal) OR (Vughia) OR (Waskurin) OR (Weaveri) OR</p> |

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|   | (Weerasinghe) OR (Whitcombi) OR (Wolffi) OR (Worsfoldi) OR (Yaan) OR (Yeonchon) OR (Yunnan) OR (Yunxian) OR (Zanoni) OR (Zhenkang) OR (Serovar) OR (Serogroup) OR (Serotype)) |
| 2 | (Animal*) OR (mammal) OR (reptile) OR (bird) OR (avian) OR (amphibian)  |
| 3 | Leptospir*  |
| 4 | 1 AND 2 AND 3 ( <b>limited to scholarly articles</b> )  |

Search in PubMed

| Search | Search Terms   |
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| 1      | <p><i>((leptospir*) AND (animal* OR mammal* OR reptil* OR bird* OR avian OR amphibian*)) AND (abramis OR agogo OR aguaruna OR alexi OR alice OR altodouro OR andaman OR anova OR arborea OR adrenal OR argentinensis OR atchafalaya OR atlanta OR australia OR autumnalis OR babudieri OR befani OR bajan OR bakeri OR balboa OR balcanica OR ballum OR bangkinang OR banna OR bataviae OR benjamini OR beye OR biggs OR Bim OR bindjei OR bikini OR bogvere OR borincana OR brasiliensis OR bratislava OR bravo OR broom OR buenos aires OR bulgaria OR butembo OR carlo OR canal zone OR canicola OR caribe OR carimagua OR carlos OR castellani OR celledoni OR zeylanica OR charges OR clayton OR copenhageni OR copenhageni OR corredores OR costa rica OR coxi OR cristobal OR ciuca OR cynopteri OR dadas OR dakota OR darien OR dehong OR dikken OR djasiman OR djauzi OR erinacei auriti OR evansi OR fluminense OR fort bragg OR fugas OR galton OR gatuni OR Gem OR gengma OR georgia OR geyaweera OR goiano OR gorgas OR grippotyphosa OR guangdong OR guaratuba OR guaricura OR guide OR gurung OR haemolytica OR hainan OR hampton OR hardjo OR hawtin OR hebdomadis OR helou OR holland OR hongchon OR hualien OR huallaga OR huanuco OR hurstbridge OR icterohaemorrhagiae OR istria OR jalan OR javanica OR jonxis OR jules OR kabara OR kamble OR kamiyoga OR kanaya OR kaup OR kenya OR khor t OR kaszuba OR kobbe OR kremastinos OR kunming OR kuwait OR kwale OR Lai OR lambwe OR langat OR lanka OR sichuan OR lincang OR lora OR los banos OR louisiana OR luis OR machiguenga OR malaya OR malaysia OR mangus OR sanhao OR manila OR mankarso OR manzhuang OR maru OR medinensis OR mending OR mengla OR mendelian OR meng a OR mengpeng OR menglun OR menoni OR mini OR ogden OR moores OR mozdok OR muelleri OR muenchen OR mujunkums OR mwogolo OR myocastor OR naam OR nanlu OR navet OR ndahambukuje OR ndambari OR nicaragua OR nigeria OR nona OR nyanza OR orleans OR paidjan OR panama OR patoc OR perameles OR peru OR peruvian OR pina OR pinching OR Poi OR polonica OR pomona OR portblairi OR portlandvere OR princeton OR proechimys OR pyrogens OR qingshui OR rahmati OR rama OR raeisi OR ranarum OR ratnapura OR recreio OR ricardi OR Rio OR rioja OR robinson OR roumania OR rupa pa OR rusjan OR sanmartin OR santarosa OR sao paulo OR sharmin OR saxkoebing OR schueffneri OR sejroe OR semarang OR sentot OR shermani OR sichuan OR smithi OR sofia OR sokoine OR sorexjalna OR soteropolitano OR srebarna OR sulzer d OR sumner OR szwajzak OR tabaquismo OR tarassovi OR tingomaria OR tonkin OR topaz OR trinidad OR tropical OR tsaratsovo OR tunis OR valbuzzi OR vanderhoeden OR varela OR vargovics OR varilla OR vugia OR wakuri OR weaver OR weerasinghe OR whitcomb OR wolff OR worsfold OR yaan OR yeoncheon OR yunnan OR yunxian OR zanoni OR zhejiang OR serovar* OR serogroup* OR serotype*).</i></p> |

Search performed in Scopus

| Search | Search Terms   |
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| 1      | <p>(( TITLE-ABS-KEY (( abramis ) OR ( agogo ) OR ( aguaruna ) OR ( alexi ) OR ( alice ) OR ( altodouro ) OR ( andamana ) OR ( anhoa ) OR ( arborea ) OR ( arenal ) OR ( argentinensis ) OR ( atchafalaya ) OR ( atlantae ) OR ( australis ) OR ( autumnalis ))) OR ( TITLE-ABS-KEY (( babudieri ) OR ( bafani ) OR ( bajan ) OR ( bakeri ) OR ( balboa ) OR ( balcanica ) OR ( ballum ) OR ( bangkinang ) OR ( banna ) OR ( bataviae ) OR ( benjamini ) OR ( beye ) OR ( biggis ) OR ( bim ) OR ( bindjei ) OR ( birkini ) OR ( bogvere ) OR ( borincana ) OR ( brasiliensis ))) OR ( TITLE-ABS-KEY (( bratislava ) OR ( bravo ) OR ( broomi ) OR ( buenos aires ) OR ( bulgarica ) OR ( butembo ) OR ( camlo ) OR ( canalzoniae ) OR ( canicola ) OR ( caribe ) OR ( carimagua ))) OR (( TITLE-ABS-KEY (( carlos ) OR ( castillonis ) OR ( celledoni ) OR ( ceylonica ) OR ( chagres ) OR ( claytoni ) OR ( copenhageni ) OR ( copenhageni ) OR ( corredores ) OR ( costa rica ) OR ( coxi ) OR ( cristobali ) OR ( cuica ) OR ( cynopteri ))) OR TITLE-ABS-KEY (( dadas ) OR ( dakota ) OR ( darien ) OR ( dehong ) OR ( dikkeni ) OR ( djasiman ) OR ( djatzi ) OR ( erinaceauriti ) OR ( evansi ) OR ( fluminense ) OR ( fortbragg ))) OR TITLE-ABS-KEY (( fugis ) OR ( galtoni ) OR ( gatuni ) OR ( gem ) OR ( gengma ) OR ( georgia ) OR ( geyaweera ) OR ( goiano ) OR ( gorgas ) OR ( grippotyphosa ) OR ( guangdong ) OR ( guaratuba ) OR ( guaricura ) OR ( guidae ))) OR TITLE-ABS-KEY (( gurungi ) OR ( haemolytica ) OR ( hainan ) OR ( hamptoni ) OR ( hardjo ) OR ( hawain ) OR ( hebdomadis ) OR ( hekou ) OR ( holland ) OR ( hongchon ) OR ( hualin ) OR ( huallaga ) OR ( huanuco ) OR ( hurstbridge ))) OR ( TITLE-ABS-KEY (( icterohaemorrhagiae ) OR ( istribica ) OR ( jalna ) OR ( javanica ) OR ( jonsis ) OR ( jules ) OR ( kabura ) OR ( kambale ) OR ( kamituga ) OR ( kanana ) OR ( kaup ) OR ( kenya ) OR ( khorat ) OR ( kisuba ) OR ( kobbe ) OR ( kremastos ) OR ( kunming ))) OR TITLE-ABS-KEY (( kuwait ) OR ( kwale ) OR ( lai ) OR ( lambwe ) OR ( langati ) OR ( lanka ) OR ( lichuan ) OR ( lincang ) OR ( lora ) OR ( losbanos ) OR ( louisiana ) OR ( luis ) OR ( machiguenga ))) OR TITLE-ABS-KEY (( malaya ) OR ( malaysia ) OR ( mangus ) OR ( manhao ) OR ( manilae ) OR ( mankarso ) OR ( manzhuang ) OR ( maru ) OR ( medanensis ) OR ( mengding ) OR ( mengla ) OR ( menglian ) OR ( mengma ) OR ( mengpeng ))) OR TITLE-ABS-KEY (( mengrun ) OR ( menoni ) OR ( mini ) OR ( mogden ) OR ( mooris ) OR ( mozdok ) OR ( muelleri ) OR ( muenchen ) OR ( mujunkumi ) OR ( mwogolo ) OR ( myocastoris ) OR ( naam ))) OR (( TITLE-ABS-KEY (( nanla ) OR ( navet ) OR ( ndahambukuje ) OR ( ndambari ) OR ( nicaragua ) OR ( nigeria ) OR ( nona ) OR ( nyanza ) OR ( orleans ) OR ( paidjan ) OR ( panama ) OR ( patoc ) OR ( perameles ) OR ( peru ) OR ( peruviana ) OR ( pina ))) OR TITLE-ABS-KEY (( pinchang ) OR ( poi ) OR ( polonica ) OR ( pomona ) OR ( portblairi ) OR ( portlandvere ) OR ( princestown ) OR ( proechimys ) OR ( pyrogenes ) OR ( qingshui ) OR ( rachmati ) OR ( rama ))) OR TITLE-ABS-KEY (( ramisi ) OR ( ranarum ) OR ( ratnapura ) OR ( recreo ) OR ( ricardi ) OR ( rio )</p> |



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|   | OR ( rioja ) OR ( robinsoni ) OR ( roumanica ) OR ( rugarupae ) OR ( rushan ) OR ( sanmartini ) OR ( santarosa ) OR ( saopaulo ) OR ( sarmin ) ) OR TITLE-ABS-KEY ( ( saxkoebing ) OR ( schueffneri ) OR ( sejoie ) OR ( semaranga ) OR ( sentot ) OR ( shermani ) OR ( sichuan ) OR ( smithi ) OR ( sofia ) OR ( sokoine ) OR ( sorexjalna ) OR ( soteropolitana ) OR ( srebarna ) OR ( sulzeriae ) OR ( sumneri ) ) ) ) OR ( ( TITLE-ABS-KEY ( ( szwajizak ) OR ( tabaquite ) OR ( tarassovi ) OR ( tingomaria ) OR ( tonkini ) OR ( topaz ) OR ( trinidad ) OR ( tropica ) OR ( tsaratsovo ) OR ( tunis ) OR ( valbuzzi ) OR ( vanderhoedeni ) ) OR TITLE-ABS-KEY ( ( varela ) OR ( vargonicas ) OR ( varillal ) OR ( vughia ) OR ( waskurin ) OR ( weaveri ) OR ( weerasinghe ) OR ( whitcombi ) OR ( wolffi ) OR ( worsfoli ) OR ( yaan ) ) OR TITLE-ABS-KEY ( ( yeonchon ) OR ( yunnan ) OR ( yunxian ) OR ( zaroni ) OR ( zhenkang ) OR ( serovar ) OR ( serogroup ) OR ( serotype ) ) ) ) ) |
| 2 | ( TITLE-ABS-KEY ( animal* ) OR TITLE-ABS-KEY ( mammal* ) OR TITLE-ABS-KEY ( reptil* ) OR TITLE-ABS-KEY ( bird* ) OR TITLE-ABS-KEY ( avian ) OR TITLE-ABS-KEY ( amphibian ) ) )  |
| 3 | ( TITLE-ABS-KEY ( leptospir* ) )  |
| 4 | #1 AND #2 AND #3  |

**Search performed in Wildlife and Ecology Worldwide, 18 August 2015**

This database was not supported anymore by the University of Otago during the updated search in March 2023. Therefore, this database was not used in the update on March 2023.

| Search | Search Terms   |
|--------|--|
| 1      | ((Abramis) OR (Agogo) OR (Aguaruna) OR (Alexi) OR (Alice) OR (Altodouro) OR (Andamana) OR (Anhoa) OR (Arborea) OR (Arenal) OR (Argentinensis) OR (Atchafalaya) OR (Atlantae) OR (Australis) OR (Autumnalis) OR (Babudieri) OR (Bafani) OR (Bajan) OR (Bakeri) OR (Balboa) OR (Balcanica) OR (Ballum) OR (Bangkinang) OR (Banna) OR (Bataviae) OR (Benjamini) OR (Beye) OR (Biggis) OR (Bim) OR (Bindjei) OR (Birkini) OR (Bogvere) OR (Borincana) OR (Brasiliensis) OR (Bratislava) OR (Bravo) OR (Broomi) OR (Buenos Aires) OR (Bulgarica) OR (Butembo) OR (Camlo) OR (Canalzoneae) OR (Canicola) OR (Caribe) OR (Carimagua) OR (Carlos) OR (Castellonis) OR (Celledoni) OR (Ceylonica) OR (Chagres) OR (Claytoni) OR (Copenhageni) OR (Copenhageni) OR (Corredores) OR (Costa Rica) OR (Coxi) OR (Cristobali) OR (Cuica) OR (Cynopteri) OR (Dadas) OR (Dakota) OR (Darien) OR (Dehong) OR (Dikkeni) OR (Djasiman) OR (Djatzi) OR (Erinaceauriti) OR (Evansi) OR (Fluminense) OR (Fortbragg) OR (Fugis) OR (Galtoni) OR (Gatuni) OR (Gem) OR (Gengma) OR (Georgia) OR (Geyaweera) OR (Goiano) OR (Gorgas) OR (Grippotyphosa) OR (Guangdong) OR (Guaratuba) OR (Guaricura) OR (Guidae) OR (Gurungi) OR (Haemolytica) OR (Hainan) OR (Hamptoni) OR (Hardjo) OR (Hawain) OR (Hebdomadis) OR (Hekou) OR (Holland) OR (Hongchon) OR (Hualin) OR (Huallaga) OR (Huanuco) OR (Hurstbridge) OR (Icterohaemorrhagiae) OR (Istrica) OR (Jalna) OR (Javanica) OR (Jonsis) OR (Jules) OR (Kabura) OR (Kambale) OR (Kamituga) OR (Kanana) OR (Kaup) OR (Kenya) OR (Khorat) OR (Kisuba) OR (Kobbe) OR (Kremastos) OR (Kunming) OR (Kuwait) OR (Kwale) OR (Lai) OR (Lambwe) OR (Langati) OR (Lanka) OR (Lichuan) OR (Lincang) OR (Lora) OR (Losbanos) OR (Louisiana) OR (Luis) OR (Machiguenga) OR (Malaya) OR (Malaysia) OR (Mangus) OR (Manhao) OR (Manilae) OR (Mankarso) OR (Manzhuang) OR (Maru) OR (Medanensis) OR (Mengding) OR (Mengla) OR (Menglian) OR (Mengma) OR (Mengpeng) OR (Mengrun) OR (Menoni) OR (Mini) OR (Mogden) OR (Mooris) OR (Mozdok) OR (Muelleri) OR (Muenchen) OR (Mujunkumi) OR (Mwogolo) OR (Myocastoris) OR (Naam) OR (Nanla) OR (Navet) OR (Ndahambukuje) OR (Ndambari) OR (Nicaragua) OR (Nigeria) OR (Nona) OR (Nyanza) OR (Orleans) OR (Paidjan) OR (Panama) OR (Patoc) OR (Perameles) OR (Peru) OR (Peruviana) OR (Pina) OR (Pinchang) OR (Poi) OR (Polonica) OR (Pomona) OR (Portblairi) OR (Portlandvere) OR (Prinkestown) OR (Proechimys) OR (Pyrogenes) OR (Qingshui) OR (Rachmati) OR (Rama) OR (Ramisi) OR (Ranarum) OR (Ratnapura) OR (Recreo) OR (Ricardi) OR (Rio) OR (Rioja) OR (Robinsoni) OR (Roumanica) OR (Ruparupae) OR (Rushan) OR (Sanmartini) OR (Santarosa) OR (Saopaulo) OR (Sarmin) OR (Saxkoebing) OR (Schueffneri) OR (Sejroe) OR (Semaranga) OR (Sentot) OR (Shermani) OR (Sichuan) OR (Smithi) OR (Sofia) OR (Sokoine) OR (Sorexjalna) OR (Soteropolitana) OR (Srebarna) OR (Sulzeriae) OR (Sumneri) OR |

|   |  |
|---|--|
|   | (Szwajizak) OR (Tabaquite) OR (Tarassovi) OR (Tingomaria) OR (Tonkini) OR (Topaz) OR (Trinidad) OR (Tropica) OR (Tsaratsovo) OR (Tunis) OR (Valbuzzi) OR (Vanderhoedeni) OR (Varela) OR (Vargonicas) OR (Varillal) OR (Vughia) OR (Waskurin) OR (Weaveri) OR (Weerasinghe) OR (Whitcombi) OR (Wolffi) OR (Worsfoldi) OR (Yaan) OR (Yeonchon) OR (Yunnan) OR (Yunxian) OR (Zanoni) OR (Zhenkang) OR (Serovar) OR (Serogroup) OR (Serotype)) |
| 2 | ((Animal*) OR (mammal) OR (reptile) OR (bird) OR (avian) OR (amphibian))   |
| 3 | Leptospir*   |
| 4 | 1 AND 2 AND 3  |

Table S2. Publication language of reports selected for full-text review during the systematic review of reports on *Leptospira* serovar isolations and detections in animal host species

| Language   | Number of reports for<br>full-text review<br>N=1862 |      | Number of reports unable to be<br>reviewed<br>N=172 |      |
|------------|---|------|---|------|
|            | n   | %    | n   | %    |
|            | Afrikaans   | 1    | 0.1   | 0    |
| Bulgarian  | 7   | 0.4  | 4   | 2.3  |
| Chinese    | 30  | 1.5  | 0   | 0.0  |
| Croatian   | 9   | 0.4  | 0   | 0.0  |
| Czech      | 7   | 0.4  | 7   | 4.1  |
| Dutch      | 10  | 0.5  | 9   | 5.2  |
| English    | 1376  | 55.7 | 36  | 20.9 |
| French     | 55  | 3.0  | 3   | 1.7  |
| German     | 49  | 2.5  | 3   | 1.2  |
| Hebrew     | 1   | 0.1  | 1   | 0.6  |
| Hungarian  | 4   | 0.2  | 3   | 1.2  |
| Italian    | 17  | 0.8  | 1   | 0.6  |
| Japanese   | 3   | 0.2  | 3   | 1.7  |
| Korean     | 2   | 0.1  | 2   | 1.2  |
| Malay      | 1   | 0.0  | 0   | 0.0  |
| Norwegian  | 1   | 0.1  | 0   | 0.0  |
| Polish     | 8   | 0.4  | 7   | 4.1  |
| Portuguese | 43  | 2.1  | 7   | 4.1  |
| Romanian   | 13  | 0.7  | 3   | 1.7  |
| Russian    | 91  | 4.7  | 18  | 9.9  |
| Serbian    | 4   | 0.2  | 1   | 0.6  |
| Slovakian  | 2   | 0.1  | 2   | 1.2  |
| Spanish    | 74  | 3.4  | 15  | 8.7  |
| Swedish    | 2   | 0.1  | 1   | 0.6  |
| Turkish    | 1   | 0.1  | 0   | 0.0  |
| Vietnamese | 1   | 0.1  | 1   | 0.6  |
| Unknown    | 50  | 2.3  | 45  | 23.8 |

Text S3. Reports identified until 9 March 2023 which met criteria for full-text review but could not be reviewed in the systematic review of reports on *Leptospira* serovar isolations and detections in animal host species

1. Imamura S, Yukawa M. Recent trends in leptospirosis in Japan and the use of Mongolian gerbil for test. Unknown journal.333-5.
2. Nasibullina FK. A study of sheep horses and camels for leptospirosis in the Betpak-Dala USSR Kazakhstan serotypes. 60- p.
3. Shapiro DM. Leptospirosis of silver fox and muskrat at the Balkhash fur farm USSR *Leptospira Pomona Leptospira Grippotyphosa Leptospira Kazakhstanica* II. 61- p.
4. Walch EW, Soesilo R. Serological comparison of *Leptospira* strains isolated in Batavia and elsewhere. Geneesk Tijdschr Nederl Indie. 1927;67(1):84-98.
5. Chiodi E. *L. icterohemorrhagiae* in rats of Argentina. Rev Inst Bact Dept Nation Hig [Buenos Aires]. 1934;6(3):342-6.
6. Klarenbeek A. *Leptospirosis icterohaemorrhagiae* (Weilsche Krankheit) beim Hunde. Twelfth Internal Vet Congress N Y. 1934;3:349-57.
7. Walch-Sorgradger B, Bohlander L, Schuffner WAP. Leptospirosis in Australia and some notes on species determination of isolated strains. Geneesk Tijdschr Nederl Indie. 1938;78(38):2299-305.
8. Borg Petersen C, Christensen HI. Leptospirosis sejroe. Ugeskrift for Laeger. 1939;101(23):697-700.
9. Collier WA, Mochtar A. A serologically deviating *Leptospira* strain from the kidney of a bat. Geneesk Tijdschr Nederl Indie. 1939;79(4):226-31.
10. Mochtar A. Occurrence of *Leptospira* in pigs in Batavia. Geneesk Tijdschr Nederland Indie. 1940;80(40):2334-45.
11. Ottosen HE. Om Leptospiroseinfektion hos Rotter *Leptospira* infections in rats. Maanedsskr Dyr Laeger. 1941;53(7):173-81.
12. Bernkopf H. Experimental work on leptospirosis in cattle and men in Palestine. Harefuah [Jour Palestine Jewish Med Assoc]. 1946;30:109-10.
13. Holm H. Clinical aspects of leptospirosis. Maanedsskr Dyr laeger. 1946;58(10):189-214.
14. Wolff JW, Bohlander H, Ruys AC. Researches on Leptospirosis ballum. The detection of urinary carriers in laboratory mice. Antonie van Leeuwenhoek. 1949;15(1):1-13.
15. Popp L. Endemic occurrence of field-fever in Hanover. Naturwiss. 1950;37(1):22-.
16. Bordjosi M. Leptospirosis sejroe in Serbia. Srpski Arhiv. 1952;80(2/3):129-37.
17. Angelov S, Kuiuimdzhev I. Animal and human leptospirosis in Bulgaria with special reference to causative species of *Leptospira*. Izvestiia na Mikrobiologicheskiiia institut. 1955;6:3-10.
18. Sebek Z. Spontaneous appearance of *Leptospira sejroe* in white mice. Ceskoslovenska epidemiologie, mikrobiologie, imunologie. 1957;6(5):325-6.
19. Amosenkova N. Data from a study of additional reservoirs of *Leptospirae* in large cities. I. Infestation of dogs with icterohemorrhagic *Leptospira*. Tr Inst Epidemiol Mikrobiol I Gig Im Pastera. 1958;18:158-66.
20. Angelov S, Kuiuimdzhev I. Human and animal leptospirosis in Bulgaria and survey of causative strains of

- Leptospira*. IV. Izvestiia na Mikrobiologicheskiia institut. 1958;9:3-8.
21. Murphy LC, Cardeilhac PT, Alexander AD, Evans LB, Marchwicki RH. Prevalence of agglutinations in canine serums to serotypes other than *Leptospira canicola* and *Leptospira icterohaemorrhagiae*. Report of isolation of *Leptospira pomona* from a dog. Amer Jour Vet Res. 1958;19(70):145-51.
  22. Oka T. Researches for leptospirosis of the stray dogs in Sakai, Kdchi and Fukui cities. Bull Univ Osaka Prefect Ser B Agric and Biol. 1958;8:33-7.
  23. Parnas J. Results of the general investigation of the scientific expeditions on the leptospiroses for the years 1954, 1955, 1956 and 1957. Arch Inst Pasteur Tunis. 1958;35(3/4):275-300.
  24. Roth EE, Knieriem BB. The natural occurrence of *Leptospira pomona* in an opossum - a preliminary report. Jour Amer Vet Med Assoc. 1958;132(3):97-8.
  25. Soloshenko IZ. The part played by blood-sucking Arthropoda in the transmission and harbouring of pathogenic leptospires I. The part played by blood-sucking Arthropoda in the transmission and harbouring of the organism of Weil's disease. Zhur Mikrobiol Epidemiol I Immunobiol 1958;29(1/2):19-23.
  26. Vysotskii BV, Malykh FS, Kuznetsov AP. Fur-bearing animals as additional reservoirs of pathogenic leptospires in the wild. Zh Mikrobiol Epidemiol i Immunobiol. 1958;29(8):1227-9.
  27. Zwierz J, Durlakowa I, Karmanska K, Zwierzchowski JAN, Lazuga K, Korczynska A. Investigations of the fauna in the foci of the Tomashow Lubelski County epidemic of leptospirosis. Ann Univ Mariae Curie Sklodowska Sect D Med. 1958;13(38):421-37.
  28. Zwierz J, Durlakowa J, Karmaska K, Zwierzchowski J, Lazuga K, Korczynska A. Research on fauna in focal spots of the leptospirosis epidemic in the Tomaszow Lubelski District. Medycyna Weterynaryjna. 1958;14(11):647-57.
  29. Hou TC, Cheng LT, Yiu CC, Chung HL, Hsu PN. Epidemiological survey of leptospirosis in Yunnan. Chinese Jour People S Health. 1959;1(6):533-7.
  30. Laboratory Of Sino-Soviet Friendship Hospital PFAF, People'S H. Further studies of animal hosts of leptospirosis in Kwangtung. Chinese Jour People S Health. 1959;1(8):733-4.
  31. Lacerda PMG, de Freitas DC, Lacerda JPG. Notes on bovine leptospirosis Arq Inst Biol [Sao Paulo]. 1960;27:87-91.
  32. Parnas J, Koslak A, Krukowska M. Investigations of *Leptospira bataviae*. Zentralbl Bakt Parasitenk Infektionskrankh U Hyg. 1960;180(3):379-86.
  33. Babudieri B, Mateew D. Serologic studies on some Bulgarian strains of *Leptospira*. Rend Ist Super Sanita. 1961;24(9):614-22.
  34. Pestana de Castro AF, Rosa CAS, Troise C. Cavies as reservoirs of *Leptospira* in Sao Paulo. Isolation of *Leptospira icterohaemorrhagiae* Biologico. 1961;27(9):207-9.
  35. Santa Rosa CA, de Castro AFP, Troise C. Isolation of *Leptospira pomona* from swine in the state of Sao Paulo (Brazil). Arq Inst Biol [Sao Paulo]. 1962;29:165-74.
  36. Asmera J. Results of research of leptospiroses in the district of Ostrava. Ceskoslov Parasitol. 1963;10:13-22.
  37. Kir'Yanov EA. Abortions of leptospirosis etiology in pigs. Veterinariya. 1963;39(1):31-.
  38. Burov AI, Kritskaya ZF. *Leptospira* carrier state in gray rats in Odessa. Zh Mikrobiol Epidemiol Immunobiol. 1964;41(10):131-5.
  39. Byalik ZM. Serological investigations of fowl in the foci of leptospirosis Immunology, natural focalilty, and enteric

- infections From: Ref Zh Biol, 1966, No. 4B817. (Translation)1965. 73-7 p.
40. Truszczynski M, Closek D, Tereszczuk S. Serotypes of *Leptospira* isolated from cases of colibacillosis and hog cholera in Poland. *Med Weter.* 1965;21(10):584-9.
  41. Anan'In VV, Smirin VM, Khalimov MK, Kokovin IL, Panova VV, Sakhartseva TF. Natural foci of leptospirosis in south-west Tajikistan. *Zool Zh.* 1966;45(7):1090-2.
  42. Anokhof II. No english title available. *Zh Mikrobiol Epidemiol Immunobiol.* 1966;43(8):149-50.
  43. Grankova SA, Smirin VM, Vorob'Eva RN. A description of the natural leptospirosis foci in the Central Amur River region. *Zh Mikrobiol Epidemiol Immunobiol.* 1966;43(9):75-7.
  44. Popova EM, Sil'ianova VI, Iachmenev NI. Canicola leptospirosis in the northwestern USSR. *Trudy Leningradskogo nauchno-issledovatel'skogo instituta epidemiologii i mikrobiologii imeni Pastera.* 1966;29:36-43.
  45. Tagi-Zade TA, Borisova LP. *Leptospira* carrier state among nutrias (*Myocastor coypus*). *Zh Mikrobiol Epidemiol i Immunobiol.* 1966;43(8):146.
  46. Cacchione RA, Bulgini MJD, Cascelli ES, Martinez ES. Leptospirosis in wild animals. Recent study on its investigations: Isolation and classification from Argentinian sources. *Rev Fac C Vet* 1967;20 37-54.
  47. Grabinski J, Karmanska K. A case fo canine leptospirosis caused by the Ballum serotype. *Medycyna Weterynaryjna.* 1967;23(8):487-8.
  48. Bravo C, Restrepo M, Robledo M, Perez J. Leptospirosis in Antioquia, Colombia I: isolation of *Leptospira pomona* in pigs. *Antioquia Medica.* 1968;18(6):475-81.
  49. Kir'ianov EA. Leptospirosis in cattle caused by *Leptospira bataviae*. *Veterinariia.* 1968;45(4):36.
  50. Aguirre WG, Silva I. Isolation in Argentina of *Leptospira pyrogenes*. *Annali dell'Istituto Superiore di Sanita.* 1969;5(3-4):195-6.
  51. Kadlcik K, Kramar R, Polednikova I, Tondl F, Vychodil J. Occurrence of etiologic agents of some anthroozoonoses in small mammals and domestic animals. *Ceskoslovenska Epidemiologie Mikrobiologie Imunologie.* 1969;18(4):199-204.
  52. Tagi-Zade TA, Alekperov FP. Water fowl of the Kyzylagach preserve and their possible role in the epidemiology of leptospirosis. *Izvestiya Akademii Nauk Azerbaidzhanskoi SSR Seriya Biologicheskikh Nauk.* 1969(4):127-31.
  53. Liceras de Hidalgo J, Hidalgo R. Leptopirosis in cattle and slaughtermen of Tumbes, Peru. *Boletin de la Oficina Sanitaria Panamericana Pan American Sanitary Bureau.* 1970;68(4):297-306.
  54. Rosa CAS, Campedelli Filho O, Castro AFP. Isolation of the leptospiral serotypes Pomona and Guidae from apparently normal pigs1970. 413- p.
  55. Rosa CAS, Silva ASD, Giorgi W. Abortion in pigs isolation of the leptospiral serotype Pomona and Brucella suis1970. 412- p.
  56. Teodorovici G, Mardari A, Ivan A, Nastase A, Buzdugan I, Oana C, et al. Contributions to the study of leptospiroses on the territory of Moldavia in the 1963-1969 period. *Institutul Agronomic "Ion Ionescu De La Brad" Iasi Lucrari Stiintifice II Zootehnie-Medicina Veterinara.* 1970:379-85.
  57. Arzumanian G, Espino R, Rodriguez S, Ramirez W, Lorenzo J, Monet VM. Some studies of leptospirosis in dogs in Havana. *Academia de Ciencias de Cuba Serie Biologica.* 1971(36):1-8.
  58. Carlos ER, Kundin WD, Watten RH, Tsai CC, Irving GS, Carlos ET, et al. Leptospirosis in teh Philippines feline

- studies. Am J Vet Res. 1971;32(9):1455-6.
59. Karaseva EV. Ecological features of mammal-carriers of leptospirae (*L. grippityphosa*) and their role in natural foci of leptospirosis. Materialy Pozn Fauny Flory SSSR N S (Zool). 1971;46:30-144.
  60. Paul JR, Hanson LE, Schnurrenberger PR, Martin RJ. *Leptospira interrogans* serotypes Ballum and Grippityphosa isolated from the muskrat. J Wildl Dis. 1972;8(1):54-6.
  61. Sebel Z, Chmela J. Natural foci and reservoirs of leptospirosis in the Olomouc Region. Ceskoslovenska Epidemiologie Mikrobiologie Imunologie. 1972;21(3):159-65.
  62. Shibley G, Clark M, Glass M, Binkley F, Trump R, Strother H, et al. Renal shedding studies with *Leptospira icterohaemorrhagiae* and *Leptospira canicola* in cattle and swine. Abstr Gen Meet Am Soc Microbiol. 1972;72:119-.
  63. Babudieri B, Carlos ER, Carlos Jr ET. Pathogenic *Leptospira* isolated from toad kidneys. Trop Geogr Med. 1973;25(3):297-9.
  64. Babudieri B, D'Aquino A. Systematics of *Leptospirae* strains isolated in the Sepik District, Papua New Guinea. The Medical journal of Australia. 1973;1(14):701.
  65. De Araujo RF, Reis R, Ryu E. Clinical evaluation of terramycin in natural outbreaks of porcine leptospirosis. Arquivos da Escola de Veterinaria Universidade Federal de Minas Gerais. 1973;25(2):127-30.
  66. Gunnarsson A, Hurvell B, Hanko E. A case report on the isolation of *Leptospira canicola* from dog. Nordisk Veterinaermedicin. 1973;25(6):313-21.
  67. Khera SS. Leptospirosis in India part 2: the etiology of infection in animals and man. Indian Science Congress Association Proceedings. 1973;60:618-9.
  68. Manev H, Yanakieva M, Tyufekchiev T, Tzanev I. Natural areas of endemicity of leptospirosis along the Veleka River valley (Bulgarian). Probl Zaraz Parazit Bol. 1973;Vol.1:145-50.
  69. Mateev D, Manev H, Stoyanov D. Natural reservoirs of leptospirosis in the region of the village of Primorsko, Bourgas district Epidem Mikrobiol Infek Bol. 1973;10(2):162-8.
  70. Munday BL, Corbould A. *Leptospira pomona* infection in wombats. J Wildl Dis. 1973;9(1):72-3.
  71. Babudieri B, Fraga de Azevedo J, Palmeiro JM. Occurrence of the *Leptospira arborea* serotype in Portugal. Anais do Instituto de Higiene e Medicina Tropical. 1974;2(1-4):471-7.
  72. Chevrier L, Gaumont R. Unapparent bovine leptospirosis in the Charolais region. Bulletin de l'Academie Veterinaire de France. 1974;47(4):213-9.
  73. Konarska D. A survey of rodents and domesticated animals in a focus of epidemic leptospirosis in the Wroclaw Province, in 1971. Przegląd Epidemiologiczny. 1974;28(4):535-42.
  74. Michna SW, Ellis W, Dikken H. The isolation of *Leptospira hardjo* from an aborting cow. Res Vet Sci. 1974;17(1):133-5.
  75. Shenberg E, Lindenbaum I, Dikken H, Torten M. Isolation of a saprophytic leptospiral serotype Andamana from carrier rats in Israel. Trop Geogr Med. 1975;27(4):395-8.
  76. Shotts Jr EB, Andrews CL, Harvey TW. Leptospirosis in selected wild mammals of the Florida Panhandle and Southwestern Georgia. J Am Vet Med Assoc. 1975;167(7):587-9.
  77. Ellis WA, O'Brien JJ, Neill S, Hanna J, Bryson DG. The isolation of a leptospire from an aborted bovine fetus. Vet



- Rec. 1976;99(23):458-9.
78. Ellis WA, O'Brien JJ, Pearson JK, Collins DS. Bovine leptospirosis: infection by the Hebdomadis serogroup and mastitis. *Vet Rec.* 1976;99(19):368-70.
  79. Hykutake S, de Biasi P, Santa Rosa CA, Belluomini HE. Epidemiological study on leptospirosis in Brazilian snakes. *Revista do Instituto de Medicina Tropical de Sao Paulo.* 1976;18(1):10-6.
  80. Kitaoka M, Otsuka S. *Leptospira canicola* isolated from *Apodemus speciosus speciosus* in Kyushu Japan. *Jpn J Med Sci Biol.* 1976;29(1):45-7.
  81. Manev K, Yanakieva M. Typing of Bulgarian strains of *Leptospira pomona* isolated from man, domestic animals and rodents, using specific sera. *Epidemiologiya, Mikrobiologiya i Infektsiozni Bolesti.* 1976;13(2):164-7.
  82. Carpio M, Wobeser G, Iversen J. *Leptospira interrogans* serotype Pomona in Saskatchewan: isolation from a naturally infected striped skunk. *Canadian Journal of Microbiology.* 1977;23(12):1654-6.
  83. Crowell WA, Stuart BP, Adams WV. Renal lesions in striped skunks (*Mephitis mephitis*) from Louisiana. *J Wildl Dis.* 1977;13(3):300-3.
  84. Kmety E, Bakoss P, Manicova E, Stupalova S, Hrabinsky M, Peci J. First observations of leptospirosis in Slovakia. *Bratislavske Lekarske Listy.* 1977;68(1):37-41.
  85. Straton C, Bercovici C, Straton A, Beldiman N, Stefanescu E, Anton N, et al. Study of the natural reservoir of *Leptospira* in the Danube delta. I. Chilia branch region. *Revista medico-chirurgicala a Societatii de Medici si Naturalisti din Iasi.* 1977;81(2):233-7.
  86. Vosta J, Hanak P, Vychodil J. Effect of population dynamics of small mammals on spread and survival of *Leptospira grippotyphosa* in foci. *Bratislavske Lekarske Listy.* 1977;68(1):50-6.
  87. Corrigan W. Naturally occurring leptospirosis (*Leptospira ballum*) in a red deer (*Cervus elaphus*). *Vet Rec.* 1978;103(4):75-6.
  88. Straton A, Straton C, Bercovici C, Beldiman N, Stefanescu E, Anton N, et al. Study of the natural reservoir of *Leptospira* in the Danube Delta. III. Region of the Sfintu Gheorghe branch. *Revista medico-chirurgicala a Societatii de Medici si Naturalisti din Iasi.* 1978;82(1):69-72.
  89. Sebek Z, Hodkova Z, Palicka P, Zitek K, Valova M. First demonstration of natural foci of *Leptospira pomona* in the Czech Socialist Republic. *Ceskoslovenska epidemiologie, mikrobiologie, imunologie.* 1979;28(3):155-62.
  90. Cacchione RA, Cascelli ES, Saravi MA, Martinez ES. Distribution and importance of leptospirosis among animals and human beings in Argentina. *Revista de Medicina Veterinaria, Argentina.* 1980;61(3):236-42, 44-47.
  91. Espino R, Cabrera L, Cornide RI. Isolation of *Leptospira pomona* from *Mus musculus* obtained from a rice growing zone of Havana province, Cuba. *Academia de Ciencias de Cuba Informe Cientifico-Tecnico.* 1981(164):1-7.
  92. Liceras de Hidalgo J. Leptospirosis in Tingo María, Huánuco Department, Peru. II. Study in wild animals. *Bull Pan Am Health Organ.* 1981;91(1):47-55.
  93. Liceras de Hidalgo J, Hidalgo R, Flores M. Leptospirosis in Tingo María, Department of Huánuco, Peru. I. Study on man and domestic animals. *Bull Pan Am Health Organ.* 1981;90(5):430-8.
  94. Saltaren Cobas A, Cornide Gonzalez RI. Leptospirosis in swine of the city and provinces of Havana, Cuba. *Academia de Ciencias de Cuba Informe Cientifico-Tecnico.* 1981(170):1-17.
  95. Zoonotic disease surveillance. *Weekly Epidemiological Record.* 1982;57(42):321-4.

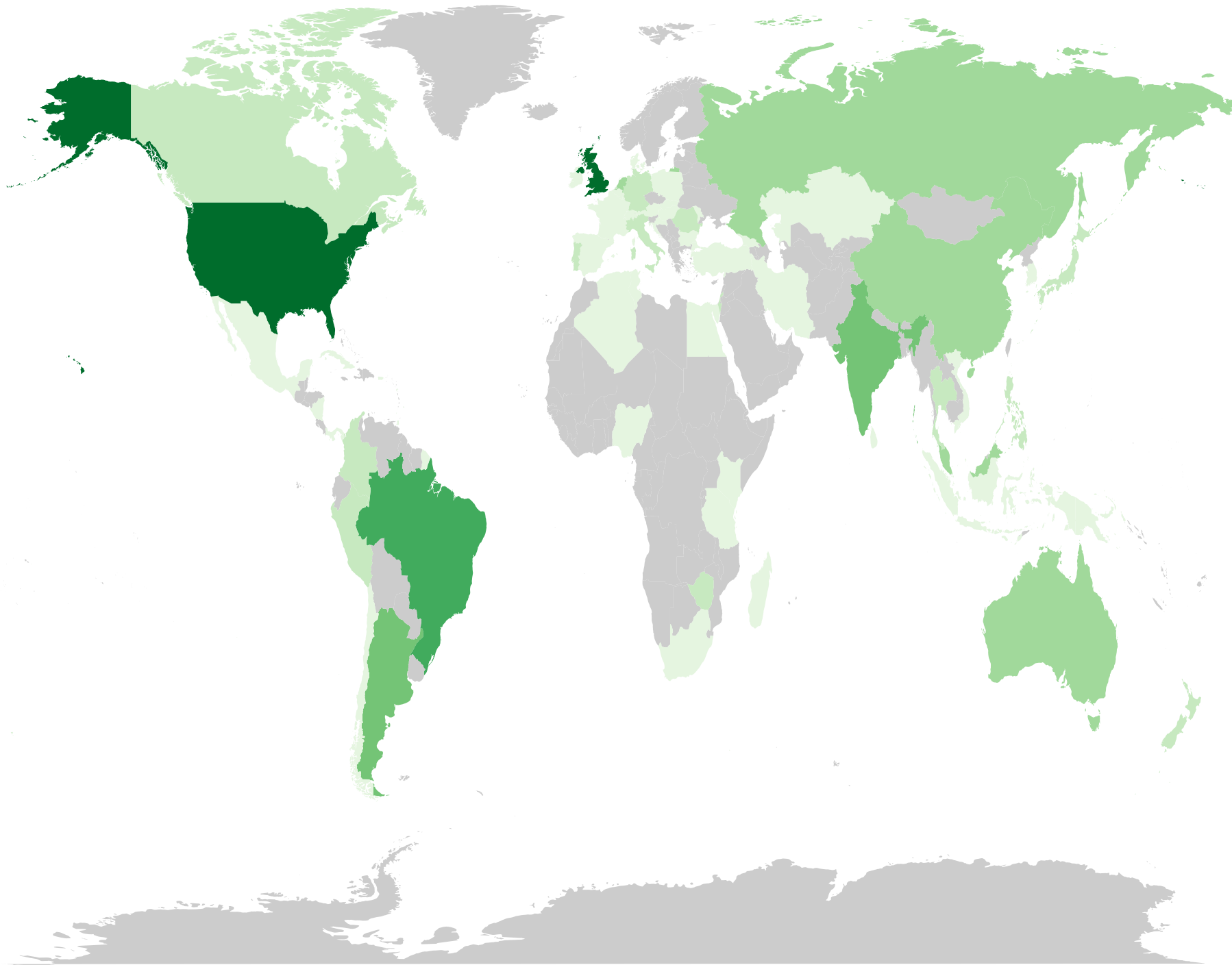
96. Ellis WA, Neill SD, O'Brien JJ, Cassells JA, Hanna J. Bovine leptospirosis: microbiological and serological findings in normal fetuses removed from the uteri after slaughter. *Vet Rec.* 1982;110(9):192-4.
97. Blackmore DK. Maintenance hosts and populations with special reference to the nidality of leptospirosis. *Pacific Science Congress Proceedings.* 1983;15(1-2):22-.
98. Chernukha Iu G, Anan'ina Iu V. Etiological structure of icterohemorrhagic leptospirosis in gray rats (*Rattus norvegicus*). *Zh Mikrobiol Epidemiol Immunobiol.* 1983(6):24-6.
99. Golubev MV, Litvin VY. The population ecology of leptospires. I. Experience in the evaluation of the number of leptospires in the carrier's body and the intensity of their release. *Zh Mikrobiol Epidemiol i Immunobiol.* 1983(6):60-3.
100. Hathaway SC, Little TW, Headlam SA, Stevens AE. Infection of free-living carnivores with leptospires of the Australis serogroup. *Vet Rec.* 1983;113(11):233-5.
101. Mailloux M, Coghlan J. 4th Meeting of European *Leptospira* workers, Berlin (West), 12-14 October 1983. Abstracts. 1983:39pp.
102. Peet RL, Mercy A, Hustas L, Speed C. The significance of *Leptospira* isolated from the kidneys of slaughtered pigs. *Aust Vet J.* 1983;60(7):226-7.
103. Stoianova NA, Popova EM, Iachmenev NI, Sil'ianova VI, Semenovich VN. Antigenic structure of leptospires of the Canicola serogroup isolated in the north-western regions of the RSFSR. *Zh Mikrobiol Epidemiol i Immunobiol.* 1983(6):37-41.
104. Karaseva EV, Chernukha YG, Strikhanova EV. Wildlife focus of leptospirosis in the rice fields of Krasnodor region and its control. *Zh Mikrobiol Epidemiol i Immunobiol.* 1984(3):58-62.
105. Cornide RI, Ruiz A, Ortiz D. Leptospirosis in dogs in the province of Guantanamo, Cuba, municipalities of Maisi, Guantanamo and Baracoa. *Revista Cubana de Ciencias Veterinarias.* 1985;16(2):133-44.
106. Shimizu T, Kono I, Yasuda N, Akuzawa M. Acute leptospirosis in a calf possibly preceding seroconversion of the herd. *Memoirs of the Faculty of Agriculture Kagoshima University.* 1985;21(30):167-74.
107. Bernasovskaya EP, Moiseeva AV, Kompantsev NF, Kondratenko VP, Popova GA, Klimenko LF, et al. The Norway rat - origin of human infection with icterohaemorrhagic leptospirosis in the Ukraine. Sokolov VE, Karaseva EV, editors: Nauka; 1986. 19-24 p.
108. Franken P, Hartman EG, de Boer W. *Leptospira hardjo* on a dairy farm. *Tijdschr Diergeneesk.* 1986;111(11):533-6.
109. Jacobs JW, Korver H, Terpstra WJ. Leptospirosis in a poultry slaughterhouse. *Ned Tijdschr Geneesk.* 1986;130(30):1367-9.
110. Amadeo D, Autorino GL, Aleandri M. About an outbreak of *Leptospira hardjo* infection in a free cattle herd in a Roman province. *Trop Geogr Med.* 1987;39(1):S5-S6.
111. Melo MEBD, Brasil DP, Cavalcanti TIR, Silva MJBD. Study of *Leptospira* in rates captured in the urban area of Recife, Pernambuco, Brazil CCS (Ciencia Cultura Saude). 1987;9(4):29-30.
112. Zhang F, Long P, Meng P, Wang J. Identification of *Leptospira* Kunming of pomona serogroup. *Acta Microbiologica Sinica.* 1987;27(1):88-91.
113. Brem S, Kopp H, Meyer P, Hollmann P. The first isolation of *Leptospira* serovar hardjo in West Germany. *Berl Muench Tieraerztl Wochenschr.* 1988;101(12):419-21.

114. Cinco M, Panfili E, Banfi E, Schonberg A, Everard COR. Remarks on *Leptospira* identification at species level additional tests to better define their saprophytic or parasitic nature. *Israel J Vet Med.* 1988;44(1):31-6.
115. Kocik T. Actual problems of leptospirosis in animals in Poland. *Przeglad epidemiologiczny.* 1988;42(4):364-9.
116. Kondratenko VF, Bunin IK, Rodionova NS, Danilkin AP, Yagovkin EA. Wildlife focus of *Leptospira icterohaemorrhagiae* in the Lower Don region of the USSR. *Zh Mikrobiol Epidemiol Immunobiol.* 1988(5):38-41.
117. Mani R. Bovine leptospirosis: a case report. *Indian Vet J.* 1988;65(10):924-.
118. Desmecht M, Smeets L. Ondatra one of the main sources of leptospirosis of cattle. *Annales de Medecine Veterinaire.* 1989;133(5):413-9.
119. Espino R, Malajov Yu A, Cornide RI, Suplico AN. Taxonomic position of *Leptospira* strains isolated from cattle, swine and synanthropic rodents from the Republic of Cuba. *Revista Cubana de Ciencias Veterinarias.* 1989;20(1):89-94.
120. Gonzalez Gallo JA, Jimenez R, Martinez A. Leptospirosis in pigs in the Villa Clara Province, Cuba. *Revista Cubana de Ciencias Veterinarias.* 1989;20(4):251-6.
121. Jarekova J, Kmety E. Following the evolution of the natural foci of leptospirosis in chosen localities of Zahorska lowlands. *Entomologicke Problemy.* 1989;19:347-55.
122. Kocik T. Isolation of *Leptospira interrogans* serovar Mozdok from an outbreak of leptospirosis in pigs. *Medycyna Weterynaryjna.* 1989;45(7):409-11.
123. Nagy G. Isolation of leptospirae in a semi-solid medium. *Magyar Allatorvosok Lapja.* 1989;44(6):349-52.
124. Agaev IA. The self-maintenance of natural foci of leptospirosis. *Zh Mikrobiol Epidemiol i Immunobiol.* 1990(12):40-4.
125. Batra HV, Chandiramani NK, Mandokhot UV. Prevalence of leptospirosis in farm animals in Haryana, India. *Indian J Anim Sci.* 1990;60(7):755-60.
126. Bolin CA, Cassells JA. Isolation of *Leptospira interrogans* serovar Bratislava from stillborn and weak pigs in Iowa. *J Am Vet Med Assoc.* 1990;196(10):1601-4.
127. Makeev SM, Maramovich AS, Yaroshenko VA. Immunologic monitoring of leptospirosis in the Maritime Territory. *Zh Mikrobiol Epidemiol i Immunobiol.* 1990(9):31-6.
128. Makeev SM, Maramovich AS, Yaroshenko VA. Immunological monitoring of *Leptospira* infections in Primorski Krai Russian SFSR USSR. *Zh Mikrobiol Epidemiol i Immunobiol.* 1990(9):31-6.
129. Murray RD. A field investigation of causes of abortion in dairy cattle. *Vet Rec.* 1990;127(22):543-7.
130. Nagy G. Isolation of *Leptospira interrogans* serovar Hardjo from lactating cows. *Magyar Allatorvosok Lapja.* 1990;45(8):485-8.
131. Rocha T. Isolation of *Leptospira interrogans* serovar Mozdok from aborted swine fetuses in Portugal. *Vet Rec.* 1990;126(24):602.
132. Desmecht M, Korver H, Terpstra WJ. Isolation of *Leptospira interrogans* serovars Saxkoebing, Grippotyphosa and Copenhageni from muskrats in Belgium. *Vlaams Diergeneeskundig Tijdschrift.* 1991;60(2):59-63.
133. Jung SC, Kim JM, Park JM, Choi WP. Biochemical characterization of *Leptospira interrogans* isolated from animals in Korea. *Research Reports of the Rural Development Administration (Suweon).* 1991;33(3 VET):1-10.
134. Vosta J, Suchy P. Hedgehog western variety *Erinaceus europaeus* the reservoir of *Leptospira bratislava* in South

- Bohemia. Sbornik Agronomicka Fakulta v Ceskych Budejovicich Zootechnicka Rada. 1991;8(1):3-12.
135. Akkermans JP, Kreeft HJ. Results of studies with aborted cattle fetuses. Tijdschr Diergeneesk. 1992;117(13):375-9.
  136. J-Ne Kaszanyitzky E, Bajmocy E, Bacsadi A. Experiences on the diagnosis of abortion caused by *Leptospira* in cows. Magyar Allatorvosok Lapja. 1992;47(7):364-8.
  137. Kocik T. Bovine leptospirosis epizootiological studies. Medycyna Weterynaryjna. 1992;48(1):11-3.
  138. Kim JS, Park SI, Huh Y, Baranton G, Amazouz E. Characteristics of leptospires isolated in Korea. Journal of the Korean Society for Microbiology. 1993;28(4):279-83.
  139. Brihuega B, Hutter E. Incidence of canine leptospirosis in the city of Buenos Aires. Veterinaria Argentina. 1994;11(102):98-101.
  140. Zamora J, Riedemann S, Cabezas X, Vega S. Comparison of four microscopic techniques for the diagnosis of leptospirosis in wild rodents in the rural area of Valdivia, Chile. Rev Latinoam Microbiol. 1995;37(3):267-72.
  141. Cosier E, Pop M, Peteanu I, Jofneac A. Study on the incidence of leptospirosis in cattle, pigs, and humans with various serotypes in the Cluj district over a period of 5 years (1991-1995). Branzas P, editor 1996. 145- p.
  142. Ožegović T. Research into the spread of leptospirosis in dogs in the town of Sarajevo and its surroundings. Veterinaria (Sarajevo). 1996;45(1/4):83-114.
  143. Rocha T, Perestrelo-Vieira R. Study of the pathogenicity of *Leptospira interrogans* serovar Mozdok in swine. Revista Portuguesa de Ciências Veterinárias. 1996;91(520):174-81.
  144. Ciceroni L, Pinto A, Ciarrocchi S, Pastoris MC. *Leptospira* strains kept at the National Centre for Leptospirosis in Rome, Italy. Microbiologica. 2001;24(3):249-57.
  145. Hoang Manh L, Đau Ngoc H, Đao Xuan V. Identification of *Leptospira* serovars infecting humans, dogs and rats in Daklak province. Khoa Hoc Ky Thuat Thu Y (Veterinary Sciences and Techniques). 2002;9(1):13-8.
  146. Makeev SM, Maramovich AS, Iaroshenko VA, Kuznetsov AP, Kondakov AA, Cherniavskii VF, et al. Epidemiological aspects of leptospirosis in the eastern regions of the Russian Federation. Meditsinskaia parazitologiya i parazitarnye bolezni. 2002(4):15-20.
  147. Milas Z, Turk N, Staresina V, Margaletic J, Slavica A, Zivkovic D, et al. The role of myomorphous mammals as reservoirs of *Leptospira* in the pedunculate oak forests of Croatia. Veterinarski Arhiv. 2002;72(3):119-29.
  148. Ajithkumar S, Bindhu M, Premni A, Alex PC. Canine leptospirosis - a case report. Intas Polivet. 2003;4(1):91-2.
  149. Ward MP, Guptill LF, Wu CC. Environmental risk factors for clustering of leptospirosis in pet dog populations. Durr PA, Martin SW, editors. New Haw: Veterinary Laboratories Agency Weybridge; 2004. 19-21 p.
  150. Jogahara T, Nakamura M, Morine N, Ishibashi O, Ogura G, Kawashima Y, et al. The isolation and seroprevalence of antibodies against *Leptospira* in *Mus caroli* and *M. musculus yonakunii* on Okinawa Island. Japanese Journal of Zoo and Wildlife Medicine. 2005;10(2):85-90.
  151. Niwetpathomwat A, Douchchawee G. An investigation of rodent leptospirosis in Bangkok, Thailand. Online Journal of Veterinary Research. 2005;9(2):95-100.
  152. Ishibashi O, Ahagon A, Nakamura M, Morine N, Taira K, Ogura G, et al. Distribution of *Leptospira* spp. on the small Asian mongoose and the roof rat inhabiting the northern part of Okinawa Island. Japanese Journal of Zoo and Wildlife Medicine. 2006;11(1):35-41.

153. Suepaul S, Borde G, Carrington C, Campbell M, Chadee D, Adesiyun AA. Serovars of *Leptospira* isolates recovered from suspected cases of canine leptospirosis, apparently healthy stray dogs and rodents in Trinidad. Bangalore: Commonwealth Veterinary Association; 2007. p. 100.
154. Langoni H, Souza LCd, Silva AVd, Cunha ELP, Silva RCd. Epidemiological aspects in leptospirosis. Research of anti-*Leptospira* spp. antibodies, isolation and biomolecular research in bovines, rodents and workers in rural properties from Botucatu, SP, Brazil. Braz J Vet Res An Sci. 2008;45(3):190-9.
155. Clark DV, Kuchuloria T, Akhvlediani T, Hepburn MJ, Pimentel G, Chokheli M, et al. Leptospirosis in the Republic of Georgia. Am J Trop Med Hyg. 2009;81(5, Suppl. S):223-4.
156. Proceedings of the IV Symposium of the Brazilian Association of Equine veterinarians - Abraveq - Nordeste, Praia de Portos de Galinhas, Ipojuca, Pernambuco, Brazil, 24-26 September 20102010; Zumbi: CRMV-PE.
157. Isambert M, Bellina A. The coypu (*Myocastor coypus*): pest to man - species monitoring. Bourgogne Nature. 2011;14:177-82.
158. Rodrigues RO, Silva JA, Alves TM, Dorneles EMS, Minharro S, Lage AP, et al. Characterization of outer membrane proteins of serovar Hardjo isolated from cattle in Minas Gerais, Brazil. Pesquisa Veterinaria Brasileira. 2011;31(7):555-60.
159. Yoshiki A, Matoba Y, Asakawa M, Takahashi T, Nakano Y, Kikuchi N. Isolation of *Leptospira* from raccoons and serological survey of leptospirosis in Hokkaido, Japan. J Vet Epidemiol. 2011;15(2):100-5.
160. First National Veterinary Epidemiology Meeting, Brazil, 20122012; Porto Alegre: Universidade Federal do Rio Grande do Sul, Faculdade de Veterinária.
161. Panin AN, Viktorova EV. Animal leptospirosis in the Russian Federation. 2012:22-3.
162. Ponti MN, Canu M, Carboni GA, Noworol M, Palmas B, Picardeau M, et al. Canine leptospirosis: report of an outbreak. 2012:86-7.
163. New serovars of *Leptospira* isolated in INCIENSA. Boletín INCIENSA. 2013;25(1):11.
164. Maletskaja OV, Beliaeva AI, Taran TV, Agapitov DS, Kulichenko AN. Epidemiologic situation on dangerous infectious diseases on the territory of Republic of Abkhazia. Zh Mikrobiol Epidemiol i Immunobiol. 2013(5):43-7.
165. Douadi B, Nursheena MS, Lin TK. Antimicrobial Susceptibility of *Leptospira* spp. Isolated from Environmental, Human and Animal Sources in Malaysia. Abstr Gen Meet Am Soc Microbiol. 2014;114:19-.

Figure S4. Global frequency of number of reports per country identified in the systematic review of reports on *Leptospira* serovar isolations and detections in animal host species published 1927-2022



Number of reports (total n=409)

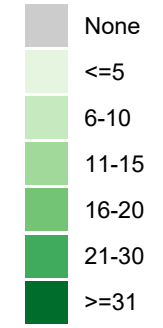


Figure S5. Histogram of publication years of reports in the systematic review of reports on *Leptospira* serovar isolations and detections in animal host species published 1927-2022



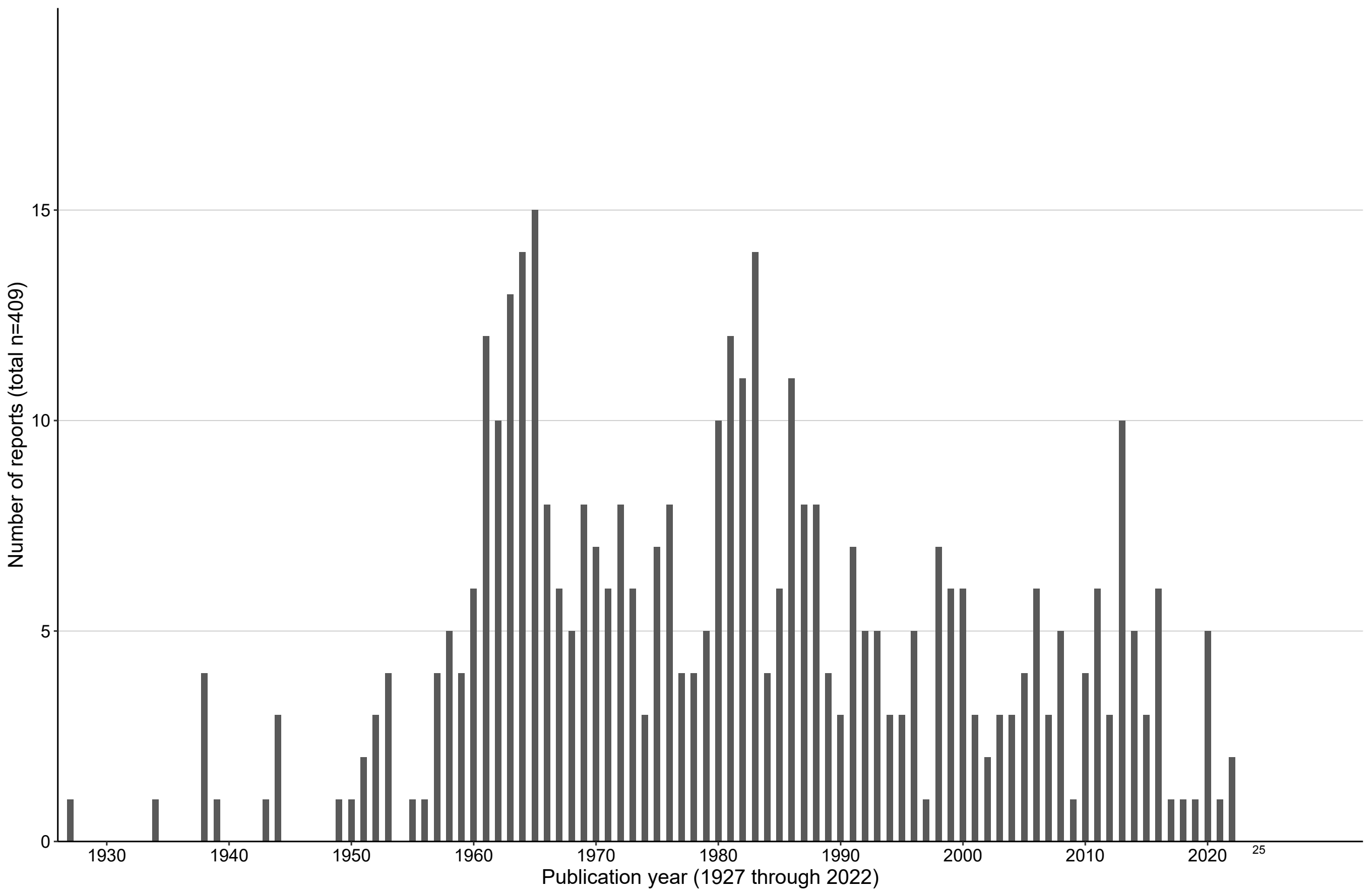


Table S6. Characteristics of reports included in the systematic review of reports on *Leptospira* serovar isolations and detections in animal host species published 1927-2022

|   | Number of reports,<br>n=409 |        |
|---|-----------------------------|--------|
|   | n                           | (%)    |
| Publication year  |                             |        |
| 1927 through 1950   | 13                          | (3.2)  |
| 1951 through 1957   | 158                         | (38.6) |
| 1976 through 2000   | 160                         | (39.1) |
| 2001 through 2022   | 78                          | (19.1) |
| Period of median year of data collection                                  |                             |        |
| 1922 through 1940   | 6                           | (1.4)  |
| 1941 through 1960   | 49                          | (11.8) |
| 1961 through 1980   | 121                         | (29)   |
| 1981 through 2000   | 69                          | (16.5) |
| 2001 through 2021   | 47                          | (11.3) |
| Not stated  | 125                         | (30)   |
| Method of <i>Leptospira</i> detection                                     |                             |        |
| Culture   | 402                         | (98.2) |
| Culture and PCR   | 7                           | (1.7)  |
| Methods of <i>Leptospira</i> serovar identification*                      |                             |        |
| Cross agglutination absorption test                                       | 265                         | (64.8) |
| Reference laboratory only   | 66                          | (16.1) |
| Monoclonal antibodies   | 61                          | (14.9) |
| Pulsed field gel electrophoresis  | 42                          | (10.3) |
| Serum factor  | 14                          | (3.4)  |
| Number of appropriate methods of <i>Leptospira</i> serovar identification |                             |        |
| 1   | 309                         | (75.6) |
| 2   | 29                          | (7.1)  |
| 3   | 5                           | (1.2)  |
| Reference laboratory (no listed methods)                                  | 66                          | (16.1) |
| Specimen type*  |                             |        |
| Blood   | 34                          | (8.3)  |
| Urine   | 111                         | (27.1) |
| Kidney  | 262                         | (64.1) |
| Other   | 55                          | (13.4) |
| Not stated  | 61                          | (14.9) |
| Number of reported <i>Leptospira</i> serovars, median (IQR)               | 1 (1-2)                     |        |
| Number of reported animal hosts, median (IQR)                             | 4 (1-13)                    |        |
| Animal age class*   |                             |        |
| Adult   | 100                         | (24.4) |

|                           |     |        |
|---------------------------|-----|--------|
| Juvenile                  | 48  | (11.7) |
| Foetus/still birth        | 18  | (4.4)  |
| Not stated                | 293 | (71.6) |
| Animal health*            |     |        |
| Healthy/asymptomatic      | 47  | (11.5) |
| Diseased                  | 72  | (17.6) |
| Died due to Leptospirosis | 17  | (4.2)  |
| fetes aborted/still birth | 23  | (5.6)  |
| Not stated                | 295 | (72.1) |

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\*Multiple categories possible per report

Table S7. Number of reports of *Leptospira* serovar detected per animal host order in the systematic review of reports on *Leptospira* serovar isolations and detections in animal host species published 1927-2022

| Animal host class | Animal host order, examples of animal  | Number of reports<br>(proportion of total, n=409)* |        | Number of<br>unique animal<br>hosts<br>defined by<br>genus and<br>species<br>(proportion of<br>all animal hosts,<br>n=144)^ |        |
|-------------------|--|--|--------|---|--------|
|                   |  | N  | (%)    | N   | (%)    |
| Mammalia          | Rodentia, e.g. rats, mice              | 194  | (45.7) | 82  | (56.9) |
| Mammalia          | Artiodactyla, e.g. cattle, pig         | 159  | (36.2) | 6   | (4.2)  |
| Mammalia          | Carnivora, e.g. dog, skunk             | 93   | (20.8) | 19  | (13.2) |
| Mammalia          | Didelphimorphia, e.g. opossum          | 24   | (5.9)  | 9   | (6.3)  |
| Mammalia          | Eulipotyphla, e.g. shrew, hedgehog     | 20   | (4.6)  | 8   | (5.6)  |
| Mammalia          | Perissodactyla, e.g. horse             | 14   | (3.2)  | 1   | (0.7)  |
| Amphibia          | Anura, e.g. frog                       | 9  | (2)    | 5   | (3.5)  |
| Mammalia          | Diprotodontia, e.g. brushtailed possum | 5  | (1.2)  | 1   | (0.7)  |
| Mammalia          | Cingulata, e.g. armadillo              | 4  | (1)    | 2   | (1.4)  |
| Mammalia          | Peramelemorphia, e.g. bandicoot        | 4  | (1)    | 3   | (2.1)  |
| Mammalia          | Primates, e.g. monkey                  | 2  | (0.5)  | 2   | (1.4)  |
| Reptilia          | Squamata, e.g. snake                   | 2  | (0.5)  | 2   | (1.4)  |
| Mammalia          | Chiroptera, e.g. bat                   | 1  | (0.2)  | - #   | - #    |
| Arachnida         | Ixodidae, e.g. tick                    | 1  | (0.2)  | 1   | (0.7)  |
| Mammalia          | Lagomorpha, e.g. rabbit                | 1  | (0.2)  | 2   | (1.4)  |
| Reptilia          | Testudines, e.g. turtle                | 1  | (0.2)  | 1   | (0.7)  |

\*Some reports included multiple animal host orders;

^Six animals which were only identified to animal host order, and could not be classified to animal genus/species were excluded;

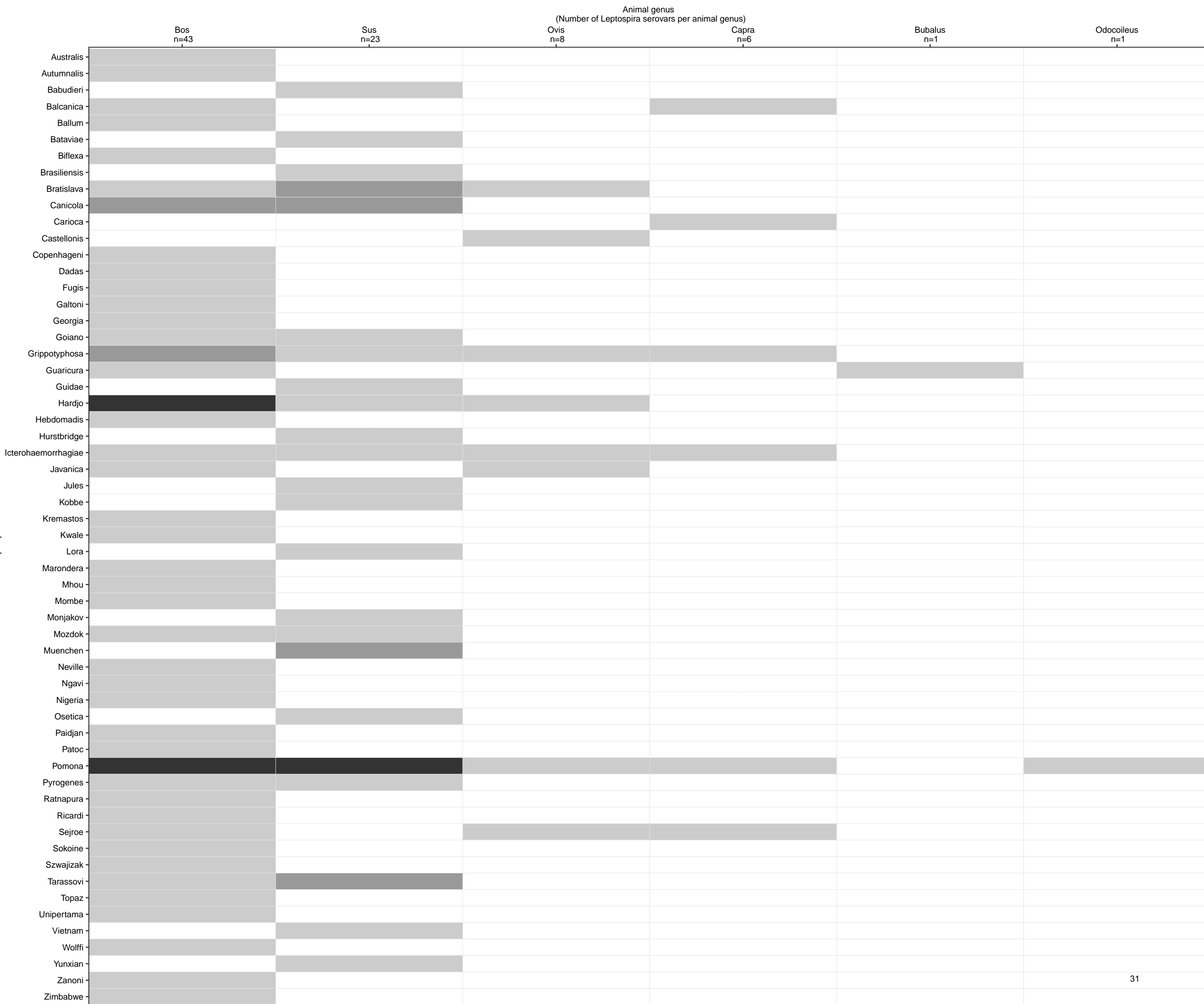
# Chiroptera had one animal host which was only identified to the animal order (Fruit bat)

Figure S8. Heat map of detected *Leptospira* serovar in 16 animal host orders per animal host genus in the systematic review of reports on *Leptospira* serovar isolations and detections in animal host species published 1927-2022 (409 reports) (A, Rodentia; B, Artiodactyla; C, Carnivora; D, Didelphimorphia; E, Eulipotyphla; F, Perissodactyla; G, Anura; H, Peramelemorphia; I, Cingulata; J, Squamata; K, Chiroptera; L, 5 animal orders with 1 serovar (Diprotodontia, Ixodidae, Lagomorpha, Primates, Testudines)

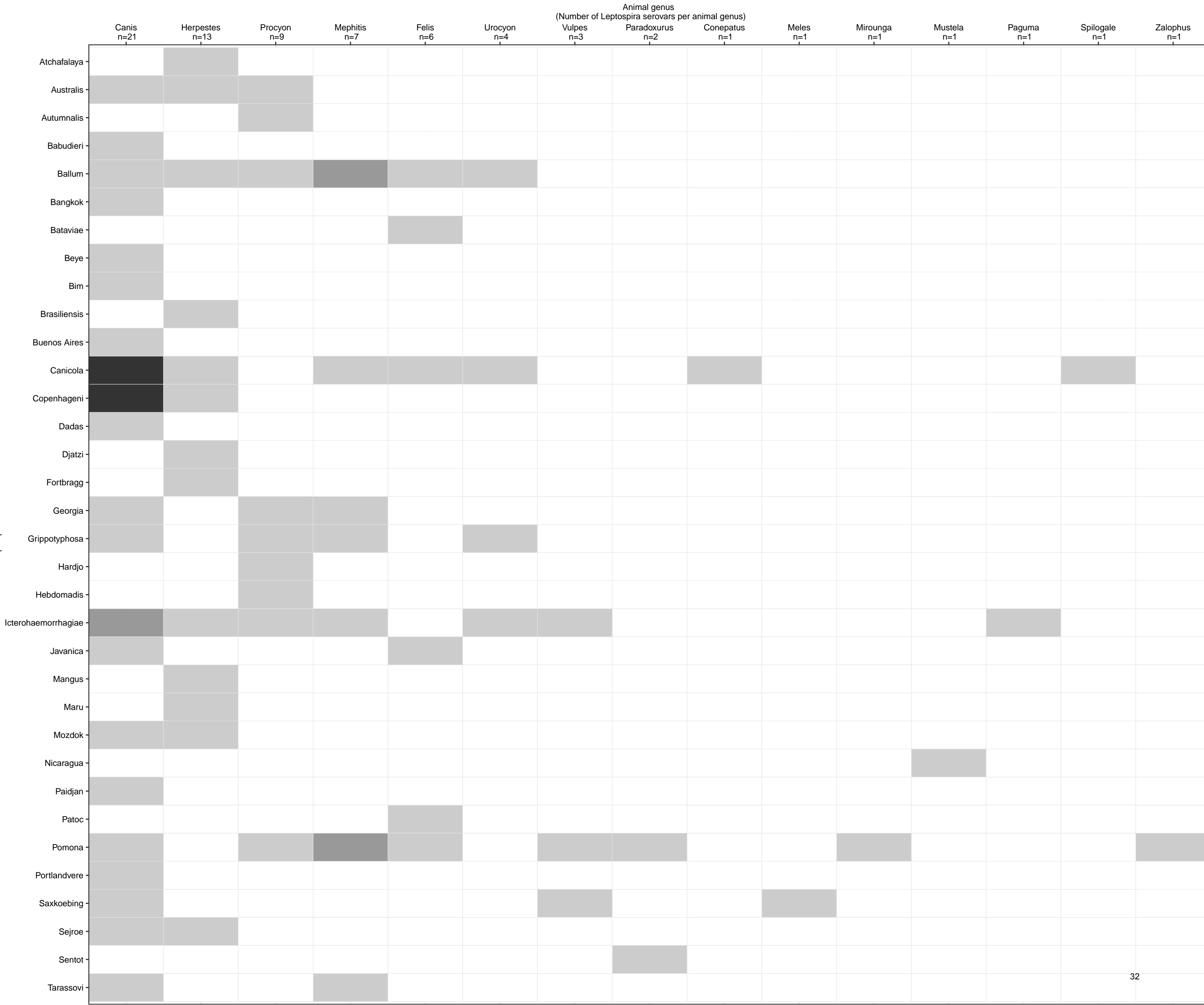
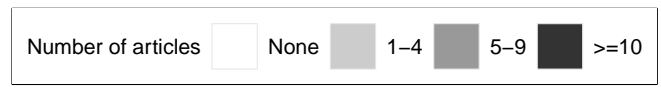
\**Leptospira* serovars which were not detected in the specific animal order are not shown



B, Artiodactyla, 58 serovars



C, Carnivora, 34 serovars





D, Didelphimorphia, 31 serovars



Animal genus  
(Number of Leptospira serovars per animal genus)

Didelphis  
n=17

Philander  
n=15

Genus  
not specified  
n=5

Caluromys  
n=2

Marmosa  
n=2

Didelphus  
n=1



E, Eulipotyphla, 17 serovars



Animal genus  
(Number of Leptospira serovars per animal genus)

Erinaceus  
n=10

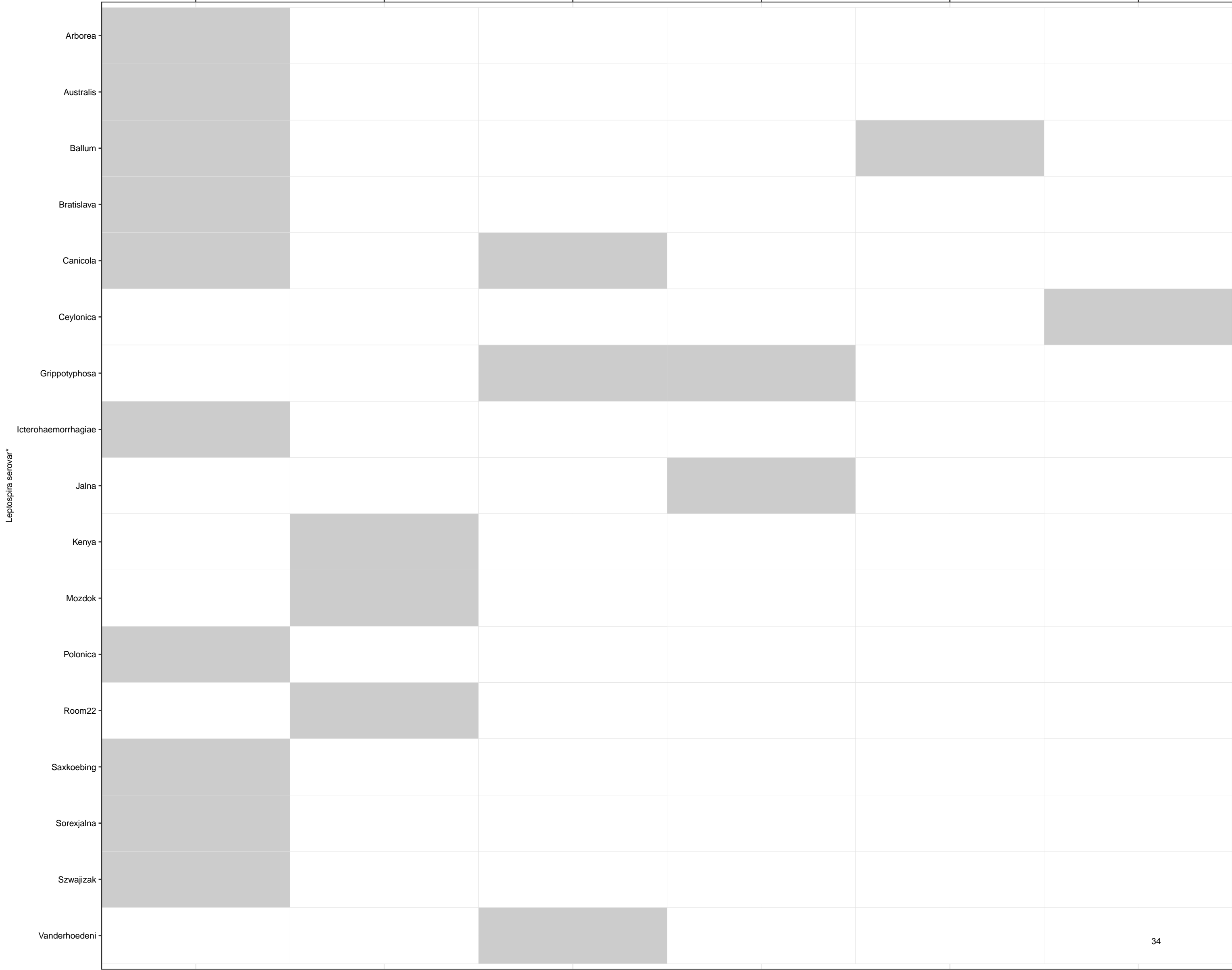
Crocidura  
n=3

Hemiechinus  
n=3

Sorex  
n=2

Blarina  
n=1

Suncus  
n=1



Number of articles 1-4

Animal genus  
(Number of Leptospira serovars per animal genus)  
Equus  
n=9



G, Anura, 8 serovars



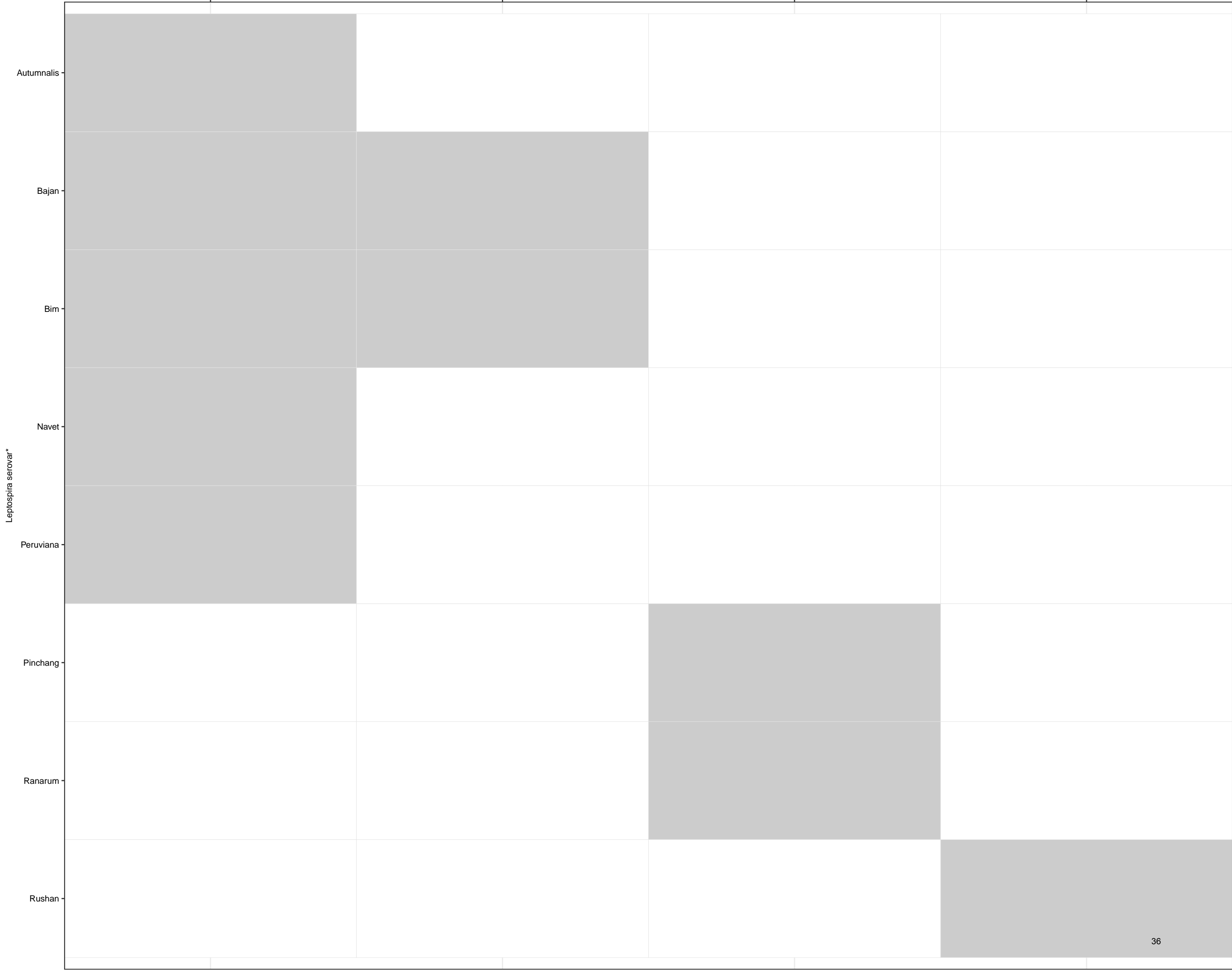
Animal genus  
(Number of Leptospira serovars per animal genus)

Bufo  
n=5

Eleutherodactylus  
n=2

Rana  
n=2

Bombina  
n=1



H, Peramelemorphia, 10 serovars



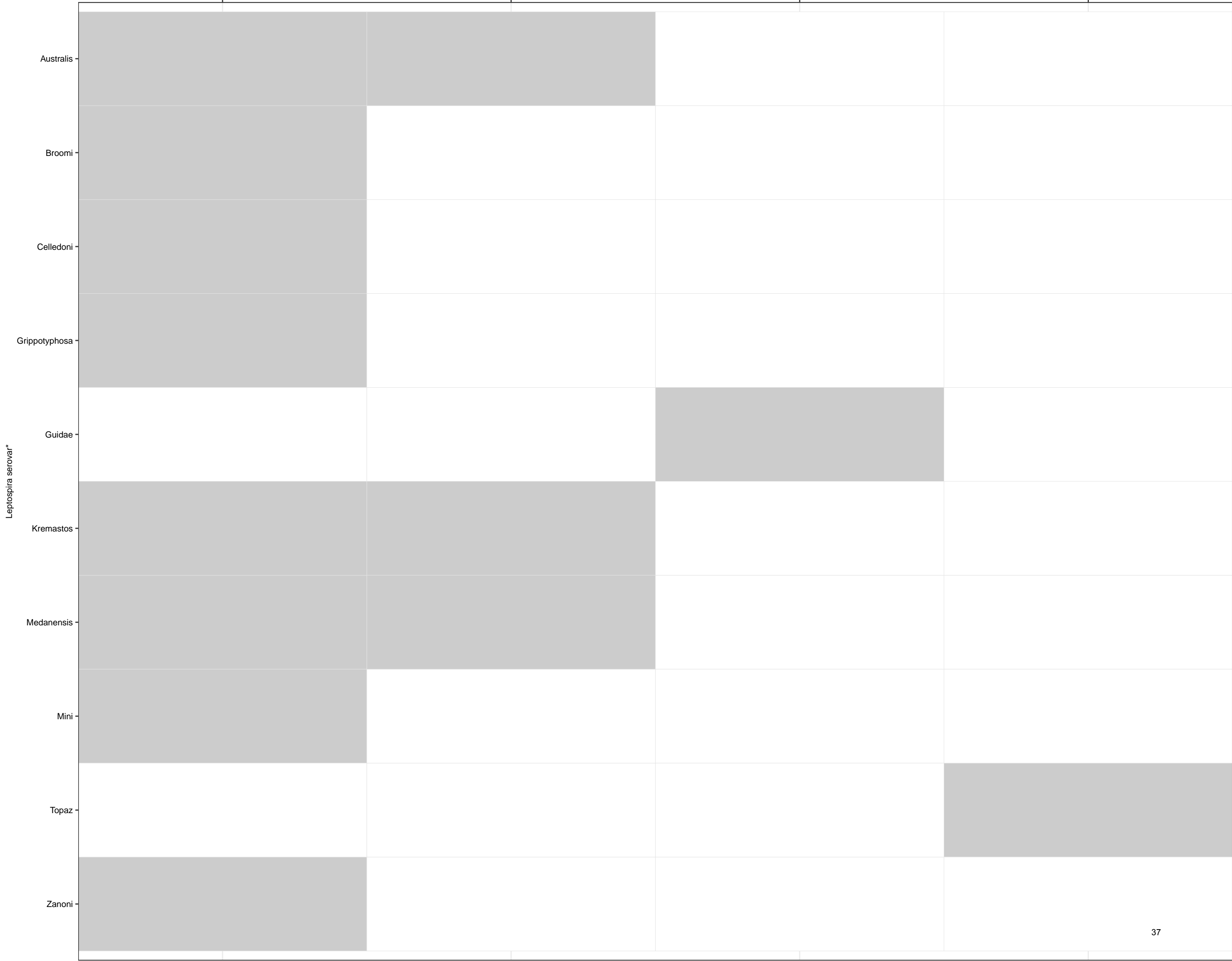
Animal genus  
(Number of Leptospira serovars per animal genus)

Isoodon  
n=8

Perameles  
n=3

Echymipera  
n=1

Genus  
not specified  
n=1

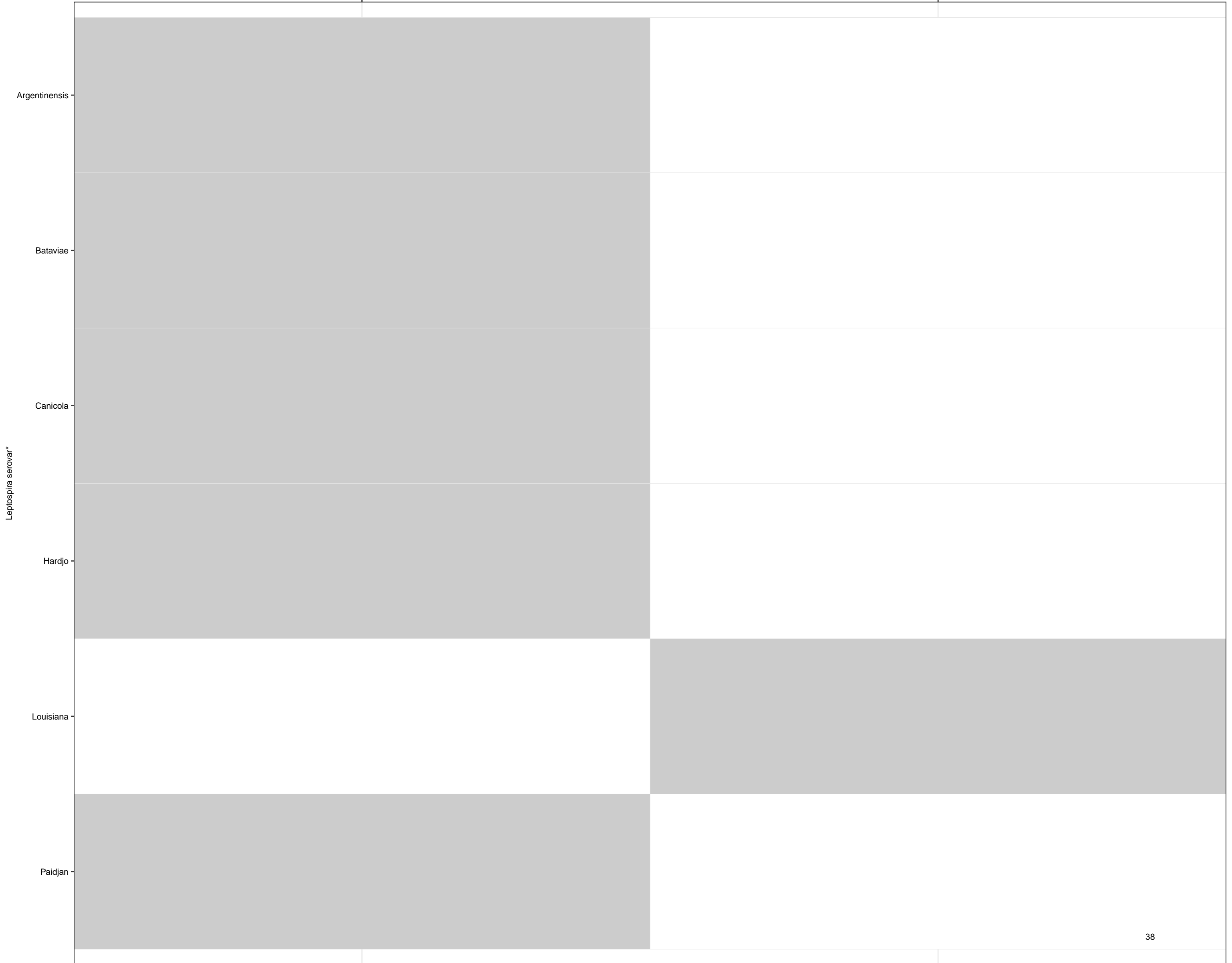


Number of articles  None  1-4

Animal genus  
(Number of Leptospira serovars per animal genus)

Chaetophractus  
n=5

Dasypus  
n=1





Animal genus  
(Number of Leptospira serovars per animal genus)

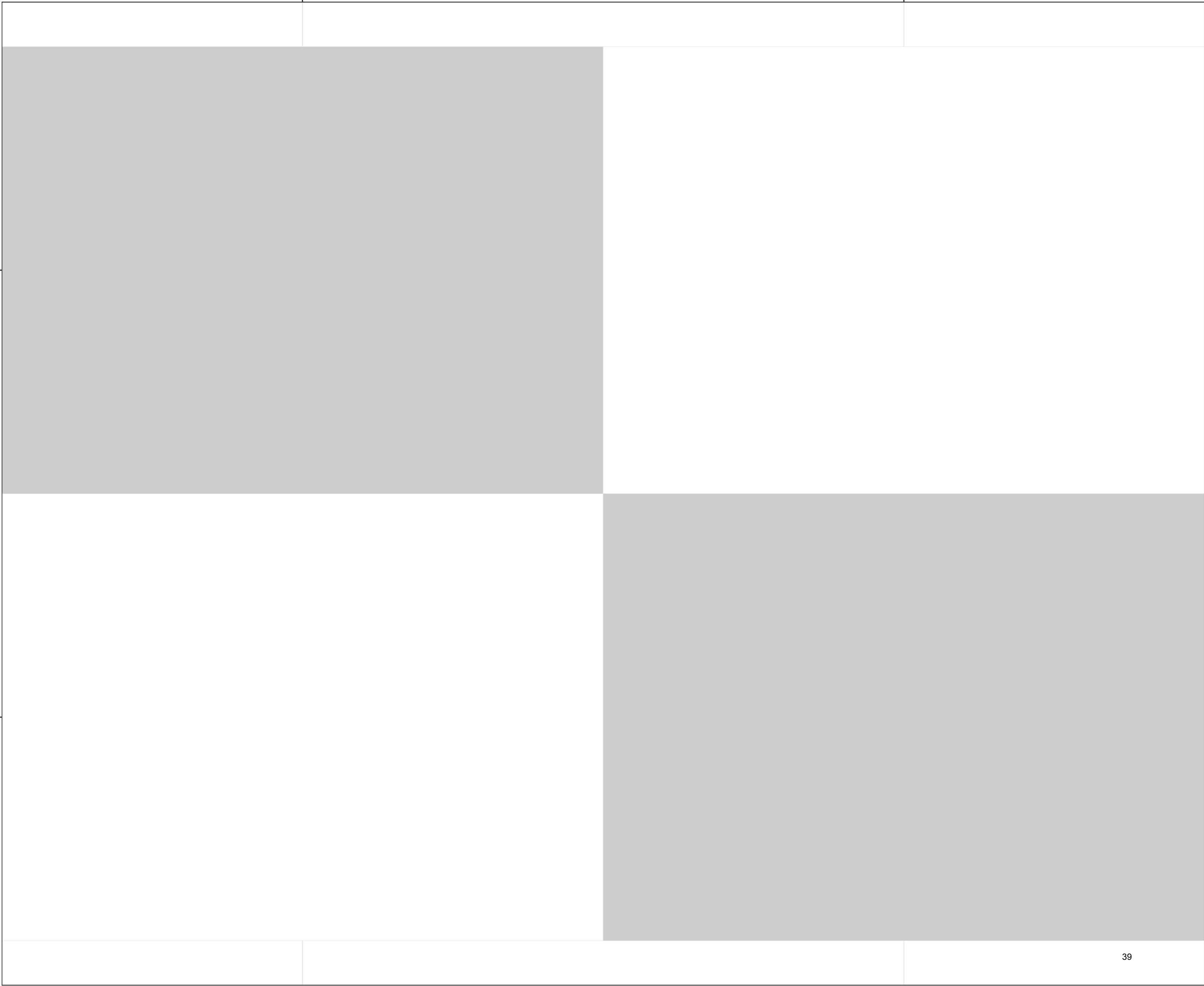
Heterodon  
n=1

Lacerta  
n=1

Ballum

Leptospira serovar\*

Sejroe



Number of articles 1-4

Animal genus  
(Number of Leptospira serovars per animal genus)  
Genus  
not specified  
n=2

Grippyphosa

Leptospira serovar\*

Icterohaemorrhagiae



L, Diprotodontia, Ixodidae, Lagomorpha, Primates, Testudines,  
all 1 serovar

Number of articles  None  1–4

Animal genus  
(Number of Leptospira serovars per animal genus)

Diprotodontia  
Trichosurus  
n=1

Ixodidae  
Dermacentor  
n=1

Lagomorpha  
Sylvilagus  
n=1

Primates  
Cebus  
n=1

Primates  
Saimiri  
n=1

Testudines  
Pseudemys  
n=1

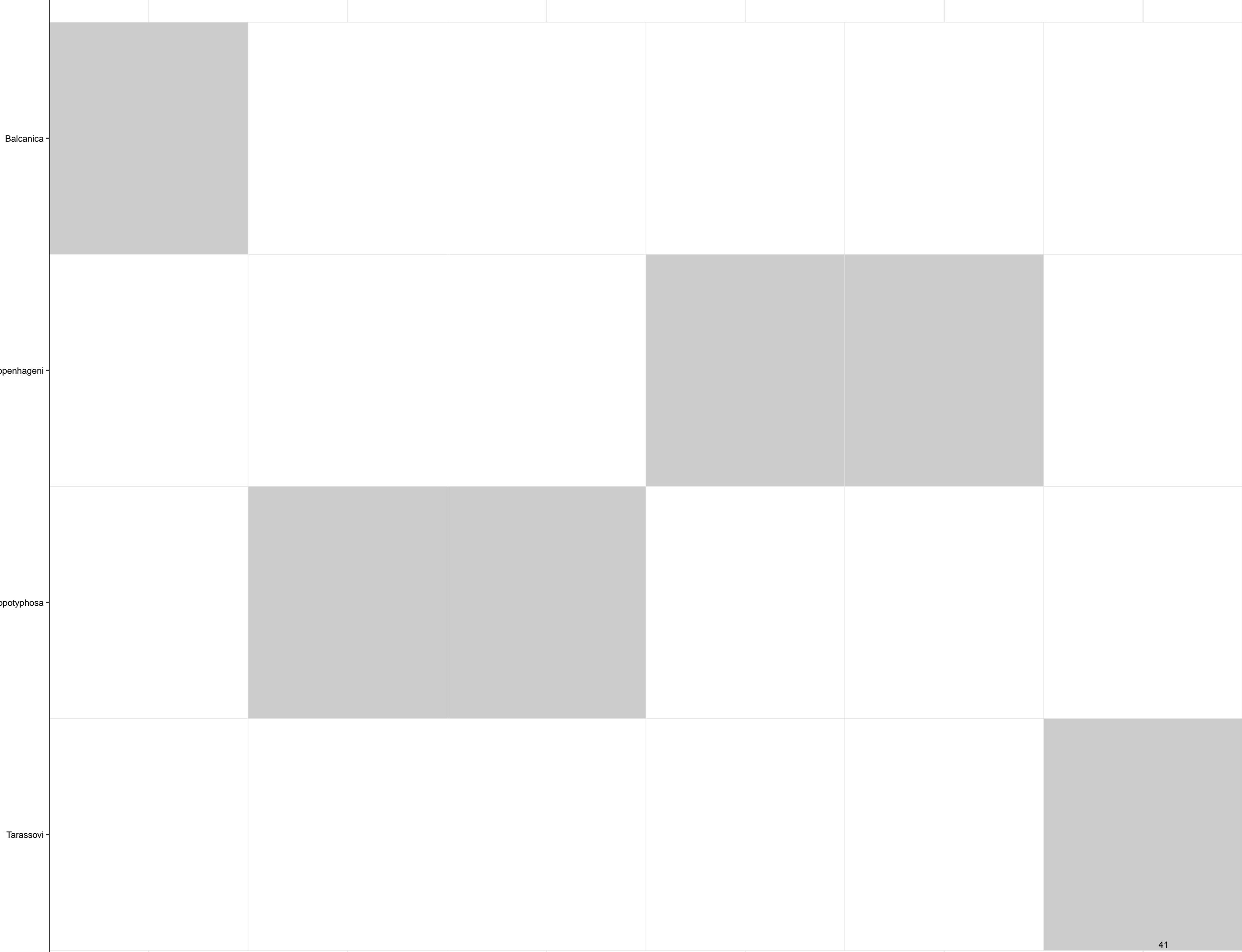


Table S9. Table of estimated human leptospirosis morbidity and mortality by Costa *et al.* and number of reports, number of serovars and number of animal hosts identified in the systematic review of reports on *Leptospira* serovar isolations and detections in animal host species published 1927-2022

| Country                          | Estimated annual morbidity of human leptospirosis per 100,000 people (95% CI) (9) | Estimated annual mortality of human leptospirosis per 100,000 people (95% CI)(9) | Number of reports Identified | Number of unique serovars detected | Number of animal hosts defined to genus and species level |
|----------------------------------|---|--|------------------------------|------------------------------------|---|
| Sri Lanka                        | 300.60 (96.54 – 604.23)   | 17.98 (6.19 – 0.47)  | 2                            | 5                                  | 4   |
| Trinidad and Tobago              | 300.48 (95.79 – 607.75)   | 16.00 (6.07 – 32.15)   | 5                            | 11                                 | 12  |
| Maldives                         | 273.57 (85.47 – 536.69)   | 11.04 (3.63 – 21.21)   | NA                           | NA                                 | NA  |
| Solomon Islands                  | 262.93 (84.11 – 518.76)   | 12.11 (4.37 – 22.80)   | NA                           | NA                                 | NA  |
| Micronesia, Federated States of  | 245.09 (77.30 – 490.19)   | 12.42 (4.59 – 22.37)   | NA                           | NA                                 | NA  |
| Papua New Guinea                 | 195.22 (61.38 – 370.88)   | 12.48 (4.68 – 24.09)   | 1                            | 1                                  | 1   |
| Saint Lucia                      | 193.16 (63.53 – 373.98)   | 8.65 (3.34 – 16.51)  | NA                           | NA                                 | NA  |
| Barbados                         | 146.92 (51.59 – 276.84)   | 8.12 (3.19 – 15.26)  | 8                            | 7                                  | 8   |
| Antigua and Barbuda              | 137.27 (43.33 – 267.49)   | 6.68 (2.59 – 12.23)  | NA                           | NA                                 | NA  |
| Samoa                            | 136.69 (47.42 – 274.47)   | 7.65 (3.08 – 14.22)  | NA                           | NA                                 | NA  |
| Saint Kitts and Nevis            | 132.71 (43.10 – 246.48)   | 7.00 (2.57 – 13.05)  | NA                           | NA                                 | NA  |
| Grenada                          | 131.53 (46.00 – 243.50)   | 7.02 (2.69 – 12.83)  | 1                            | 6                                  | 4   |
| Seychelles                       | 126.64 (43.61 – 234.03)   | 7.01 (2.28 – 13.16)  | NA                           | NA                                 | NA  |
| Vanuatu                          | 121.15 (41.99 – 233.46)   | 6.41 (2.45 – 11.79)  | NA                           | NA                                 | NA  |
| Tonga                            | 116.07 (38.15 – 225.64)   | 5.92 (2.17 – 11.28)  | NA                           | NA                                 | NA  |
| Timor-Leste                      | 114.14 (37.57 – 214.25)   | 7.56 (2.67 – 3.21)   | NA                           | NA                                 | NA  |
| Saint Vincent and the Grenadines | 107.87 (34.85 – 203.93)   | 5.87 (2.19 – 10.15)  | NA                           | NA                                 | NA  |
| Kiribati                         | 106.25 (36.04 – 194.67)   | 6.23 (2.28 – 10.96)  | NA                           | NA                                 | NA  |
| Mauritius                        | 81.14 (27.42 – 154.71)  | 4.37 (1.54 – 7.94)   | NA                           | NA                                 | NA  |
| Comoros                          | 74.31 (26.97 – 138.97)  | 5.43 (1.83 – 9.79)   | NA                           | NA                                 | NA  |
| Tuvalu                           | 74.23 (24.60 – 131.78)  | 5.03 (1.86 – 8.72)   | NA                           | NA                                 | NA  |
| Palau                            | 64.06 (20.93 – 120.03)  | 3.80 (1.38 – 7.30)   | NA                           | NA                                 | NA  |
| Sao Tome                         | 58.86 (20.59 – 107.14)  | 4.21 (1.33 – 7.65)   | NA                           | NA                                 | NA  |
| Jamaica                          | 57.68 (19.64 – 100.48)  | 3.18 (1.25 – 5.44)   | NA                           | NA                                 | NA  |
| French Guiana                    | 55.33 (17.46 – 108.36)  | 3.24 (1.18 – 6.54)   | 2                            | 2                                  | 3   |
| Fiji                             | 54.38 (18.35 – 101.12)  | 3.08 (1.25 – 5.50)   | NA                           | NA                                 | NA  |
| Rwanda                           | 50.27 (15.60 – 108.97)  | 3.09 (1.14 – 5.80)   | NA                           | NA                                 | NA  |
| Viet Nam                         | 49.69 (16.47 – 98.92)   | 2.09 (0.79 – 4.15)   | 3                            | 3                                  | 2   |
| Cape Verde                       | 44.01 (14.62 – 79.55)   | 2.18 (0.76 – 4.00)   | NA                           | NA                                 | NA  |
| Dominica                         | 42.40 (14.75 – 79.03)   | 2.45 (0.97 – 4.31)   | NA                           | NA                                 | NA  |
| Kenya                            | 39.46 (13.04 – 79.16)   | 2.89 (1.04 – 5.25)   | 2                            | 4                                  | 3   |

|                                   |                       |                    |    |    |    |
|-----------------------------------|-----------------------|--------------------|----|----|----|
| Thailand                          | 39.37 (14.16 – 77.07) | 2.06 (0.72 – 0.02) | 8  | 8  | 5  |
| Indonesia                         | 39.20 (12.76 – 77.96) | 2.15 (0.81 – 0.01) | 3  | 4  | 3  |
| Dominican Republic                | 38.60 (13.26 – 72.12) | 2.05 (0.82 – 3.72) | NA | NA | NA |
| Costa Rica                        | 38.06 (12.92 – 74.16) | 1.48 (0.54 – 2.76) | NA | NA | NA |
| Malaysia                          | 36.98 (11.36 – 73.20) | 1.68 (0.64 – 3.42) | 12 | 19 | 13 |
| Cuba                              | 36.43 (10.71 – 70.85) | 2.09 (0.83 – 3.75) | 1  | 1  | 1  |
| Ecuador                           | 35.69 (11.92 – 71.02) | 1.62 (0.50 – 3.12) | NA | NA | NA |
| Uganda                            | 35.67 (11.57 – 70.67) | 2.79 (1.05 – 5.13) | NA | NA | NA |
| Ethiopia                          | 34.99 (11.72 – 66.84) | 2.29 (0.90 – 4.12) | NA | NA | NA |
| Cambodia                          | 33.65 (10.68 – 63.81) | 1.83 (0.65 – 3.35) | NA | NA | NA |
| Burundi                           | 33.40 (11.30 – 61.92) | 2.87 (1.09 – 5.18) | NA | NA | NA |
| Haiti                             | 32.47 (10.79 – 59.80) | 2.30 (0.80 – 4.10) | NA | NA | NA |
| Brunei Darussalam                 | 32.44 (9.60 – 63.48)  | 1.33 (0.45 – 2.79) | NA | NA | NA |
| Eritrea                           | 32.18 (10.84 – 61.14) | 1.48 (0.54 – 2.76) | NA | NA | NA |
| Lichtenstein                      | 31.44 (9.19 – 71.10)  | 1.19 (0.33 – 2.79) | NA | NA | NA |
| Singapore                         | 31.03 (8.15 – 69.54)  | 1.47 (0.43 – 3.72) | NA | NA | NA |
| Panama                            | 29.49 (9.47 – 56.95)  | 1.24 (0.44 – 2.37) | 2  | 17 | 5  |
| Colombia                          | 27.93 (8.68 – 58.05)  | 1.22 (0.40 – 2.51) | 6  | 7  | 7  |
| Suriname                          | 26.64 (8.68 – 54.19)  | 1.37 (0.51 – 2.66) | NA | NA | NA |
| Marshall Islands                  | 25.71 (9.23 – 47.42)  | 2.23 (0.90 – 4.15) | NA | NA | NA |
| Nicaragua                         | 23.45 (8.00 – 44.34)  | 0.91 (0.30 – 1.64) | 2  | 6  | 5  |
| Bahamas                           | 23.36 (7.27 – 46.23)  | 1.23 (0.44 – 2.32) | NA | NA | NA |
| Yemen                             | 21.78 (6.83 – 40.94)  | 1.11 (0.42 – 1.95) | NA | NA | NA |
| United Republic of Tanzania       | 20.89 (7.27 – 38.34)  | 1.69 (0.64 – 2.90) | 4  | 7  | 5  |
| Nauru                             | 19.90 (5.48 – 44.02)  | 1.93 (0.65 – 3.98) | NA | NA | NA |
| India                             | 19.69 (6.81 – 36.81)  | 1.12 (0.38 – 1.95) | 16 | 9  | 8  |
| Peru                              | 19.63 (6.38 – 38.68)  | 0.79 (0.25 – 1.53) | 10 | 23 | 11 |
| Bangladesh                        | 19.23 (6.58 – 35.79)  | 1.00 (0.30 – 1.82) | NA | NA | NA |
| Lao People's Democratic Republic  | 19.11 (6.61 – 34.07)  | 1.09 (0.44 – 1.91) | NA | NA | NA |
| Belize                            | 19.02 (6.80 – 34.59)  | 0.81 (0.30 – 1.39) | NA | NA | NA |
| Honduras                          | 18.61 (6.28 – 33.19)  | 0.83 (0.33 – 1.45) | NA | NA | NA |
| Malawi                            | 18.17 (6.35 – 32.86)  | 1.46 (0.58 – 2.50) | NA | NA | NA |
| Equatorial Guinea                 | 18.02 (6.07 – 33.84)  | 1.59 (0.53 – 2.88) | NA | NA | NA |
| Togo                              | 17.97 (5.88 – 31.42)  | 1.18 (0.39 – 2.03) | NA | NA | NA |
| Ghana                             | 17.73 (6.45 – 32.22)  | 1.07 (0.37 – 1.94) | NA | NA | NA |
| Guatemala                         | 16.77 (5.96 – 29.96)  | 0.76 (0.26 – 1.32) | NA | NA | NA |
| Democratic Republic of the Congo  | 16.75 (5.65 – 31.65)  | 1.63 (0.63 – 2.82) | NA | NA | NA |
| Nepal                             | 16.70 (5.63 – 32.21)  | 0.91 (0.30 – 1.70) | NA | NA | NA |
| Venezuela, Bolivarian Republic of | 15.48 (4.58 – 33.41)  | 0.69 (0.25 – 1.32) | NA | NA | NA |

|                          |                      |                    |    |    |    |
|--------------------------|----------------------|--------------------|----|----|----|
| El Salvador              | 15.40 (5.49 – 27.77) | 0.70 (0.26 – 1.24) | NA | NA | NA |
| Guinea                   | 15.36 (5.55 – 26.67) | 1.22 (0.42 – 2.10) | NA | NA | NA |
| Philippines              | 14.98 (4.94 – 26.91) | 0.74 (0.26 – 1.31) | 7  | 8  | 7  |
| Brazil                   | 13.77 (4.72 – 27.09) | 0.65 (0.24 – 1.24) | 28 | 23 | 23 |
| Guernsey                 | 13.57 (4.04 – 27.43) | 0.56 (0.18 – 1.25) | NA | NA | NA |
| Benin                    | 13.26 (4.73 – 23.61) | 0.96 (0.31 – 1.68) | NA | NA | NA |
| Jersey                   | 13.18 (4.02 – 26.43) | 0.54 (0.15 – 1.10) | NA | NA | NA |
| Namibia                  | 12.65 (4.62 – 21.72) | 0.71 (0.29 – 1.19) | NA | NA | NA |
| Paraguay                 | 12.50 (4.10 – 22.03) | 0.52 (0.20 – 0.88) | NA | NA | NA |
| Burkina Faso             | 12.47 (4.52 – 22.60) | 1.09 (0.36 – 1.86) | NA | NA | NA |
| Madagascar               | 12.29 (4.40 – 20.80) | 0.78 (0.27 – 1.33) | 1  | 1  | 2  |
| Niger                    | 11.93 (3.91 – 20.85) | 1.04 (0.38 – 1.78) | NA | NA | NA |
| Senegal                  | 11.73 (4.10 – 20.59) | 0.76 (0.25 – 1.29) | NA | NA | NA |
| Egypt                    | 11.65 (4.25 – 20.62) | 0.56 (0.22 – 1.00) | 2  | 6  | 5  |
| Congo                    | 11.46 (4.15 – 22.36) | 0.99 (0.40 – 1.75) | NA | NA | NA |
| Somalia                  | 11.39 (4.12 – 20.25) | 1.20 (0.49 – 2.01) | NA | NA | NA |
| United Arab Emirates     | 11.37 (3.44 – 22.33) | 0.40 (0.12 – 0.75) | NA | NA | NA |
| Sudan                    | 11.31 (4.09 – 19.92) | 0.84 (0.35 – 1.40) | NA | NA | NA |
| Bhutan                   | 11.16 (4.06 – 19.93) | 0.64 (0.21 – 1.09) | NA | NA | NA |
| Cote d'Ivoire            | 11.13 (3.91 – 19.76) | 0.90 (0.36 – 1.55) | NA | NA | NA |
| Myanmar                  | 10.81 (3.71 – 18.72) | 0.90 (0.32 – 1.51) | NA | NA | NA |
| Oman                     | 10.65 (3.85 – 19.64) | 0.44 (0.14 – 0.79) | NA | NA | NA |
| China                    | 10.54 (3.52 – 18.39) | 0.50 (0.19 – 0.89) | 11 | 17 | 16 |
| Australia                | 10.51 (3.42 – 19.20) | 0.45 (0.16 – 0.79) | 12 | 17 | 18 |
| Central African Republic | 9.87 (3.37 – 16.94)  | 1.05 (0.43 – 1.75) | NA | NA | NA |
| Guinea-Bissau            | 9.67 (3.50 – 16.71)  | 0.97 (0.34 – 1.62) | NA | NA | NA |
| Gabon                    | 9.63 (3.02 – 20.20)  | 0.69 (0.23 – 1.34) | NA | NA | NA |
| Sierra Leone             | 9.57 (3.30 – 16.12)  | 0.94 (0.32 – 1.56) | NA | NA | NA |
| Cyprus                   | 9.45 (3.31 – 16.19)  | 0.39 (0.13 – 0.69) | NA | NA | NA |
| Cameroon                 | 9.39 (3.23 – 16.56)  | 0.82 (0.30 – 1.46) | NA | NA | NA |
| Tajikistan               | 9.22 (2.82 – 18.19)  | 0.43 (0.16 – 0.80) | NA | NA | NA |
| Bolivia                  | 8.94 (3.14 – 15.93)  | 0.48 (0.17 – 0.83) | NA | NA | NA |
| Mexico                   | 8.61 (3.08 – 15.50)  | 0.37 (0.14 – 0.67) | 1  | 1  | 1  |
| Mauritania               | 8.54 (2.91 – 14.94)  | 0.59 (0.21 – 1.01) | NA | NA | NA |
| Portugal                 | 8.50 (3.13 – 15.41)  | 0.38 (0.12 – 0.68) | 6  | 10 | 8  |
| Pakistan                 | 8.32 (2.86 – 15.14)  | 0.50 (0.20 – 0.86) | NA | NA | NA |
| Liberia                  | 8.10 (2.79 – 14.64)  | 0.70 (0.23 – 1.21) | NA | NA | NA |
| Gambia                   | 8.07 (2.83 – 13.85)  | 0.58 (0.21 – 0.99) | NA | NA | NA |
| Slovenia                 | 7.68 (2.51 – 14.17)  | 0.35 (0.11 – 0.65) | NA | NA | NA |

|                            |                     |                    |    |    |    |
|----------------------------|---------------------|--------------------|----|----|----|
| Mozambique                 | 7.54 (2.77 – 12.58) | 0.69 (0.29 – 1.15) | NA | NA | NA |
| Bosnia and Herzegovina     | 7.31 (2.41 – 13.43) | 0.36 (0.14 – 0.68) | NA | NA | NA |
| Chad                       | 7.25 (2.63 – 12.31) | 0.81 (0.28 – 1.31) | NA | NA | NA |
| Algeria                    | 7.19 (2.64 – 13.02) | 0.33 (0.12 – 0.56) | 1  | 1  | 1  |
| Morocco                    | 7.19 (2.55 – 12.90) | 0.33 (0.13 – 0.57) | NA | NA | NA |
| Uzbekistan                 | 7.05 (2.45 – 13.18) | 0.34 (0.13 – 0.60) | NA | NA | NA |
| Kosovo                     | 6.94 (2.24 – 13.19) | 0.32 (0.12 – 0.61) | NA | NA | NA |
| Nigeria                    | 6.72 (2.32 – 11.56) | 0.69 (0.24 – 1.14) | 3  | 10 | 2  |
| Republic of Moldova        | 6.65 (2.18 – 12.79) | 0.32 (0.11 – 0.60) | 1  | 1  | 1  |
| Libyan Arab Jamahiriya     | 6.63 (2.11 – 12.33) | 0.29 (0.10 – 0.52) | NA | NA | NA |
| Mali                       | 6.60 (2.25 – 11.19) | 0.64 (0.22 – 1.08) | NA | NA | NA |
| Syrian Arab Republic       | 6.56 (2.19 – 12.13) | 0.26 (0.09 – 0.46) | NA | NA | NA |
| Azores                     | 6.55 (2.21 – 11.60) | 0.35 (0.12 – 0.64) | NA | NA | NA |
| Albania                    | 6.52 (2.22 – 12.20) | 0.31 (0.12 – 0.56) | NA | NA | NA |
| Qatar                      | 6.44 (1.96 – 13.83) | 0.26 (0.08 – 0.56) | NA | NA | NA |
| Tunisia                    | 6.41 (2.28 – 11.53) | 0.27 (0.09 – 0.49) | 3  | 2  | 3  |
| Kyrgyzstan                 | 6.28 (2.26 – 12.00) | 0.34 (0.13 – 0.62) | NA | NA | NA |
| Zambia                     | 6.12 (2.25 – 10.48) | 0.64 (0.26 – 1.04) | NA | NA | NA |
| Italy                      | 5.94 (2.01 – 10.86) | 0.26 (0.09 – 0.47) | 8  | 15 | 5  |
| Saudi Arabia               | 5.68 (1.95 – 10.41) | 0.27 (0.09 – 0.48) | NA | NA | NA |
| Greece                     | 5.58 (1.99 – 9.79)  | 0.26 (0.09 – 0.45) | NA | NA | NA |
| Botswana                   | 5.52 (1.89 – 9.58)  | 0.35 (0.15 – 0.58) | NA | NA | NA |
| Djibouti                   | 5.52 (1.90 – 10.30) | 0.41 (0.16 – 0.75) | NA | NA | NA |
| Swaziland                  | 5.50 (1.99 – 9.93)  | 0.54 (0.22 – 0.91) | NA | NA | NA |
| Iran (Islamic Republic of) | 5.47 (2.02 – 9.70)  | 0.24 (0.08 – 0.43) | 4  | 2  | 4  |
| Japan                      | 5.46 (1.84 – 10.09) | 0.25 (0.10 – 0.47) | 10 | 9  | 8  |
| Chile                      | 5.37 (1.87 – 9.56)  | 0.24 (0.09 – 0.44) | 1  | 1  | 1  |
| Croatia                    | 5.34 (1.71 – 9.73)  | 0.27 (0.09 – 0.49) | 4  | 11 | 6  |
| Georgia                    | 5.13 (1.88 – 9.02)  | 0.28 (0.11 – 0.48) | 3  | 2  | 3  |
| Spain                      | 5.10 (1.85 – 9.10)  | 0.22 (0.07 – 0.39) | 3  | 5  | 3  |
| Republic of Korea          | 5.02 (1.69 – 8.77)  | 0.22 (0.08 – 0.39) | 4  | 3  | 2  |
| Isle of Man                | 4.94 (1.53 – 9.62)  | 0.23 (0.07 – 0.47) | NA | NA | NA |
| Kuwait                     | 4.86 (1.56 – 9.68)  | 0.19 (0.05 – 0.37) | NA | NA | NA |
| Ireland                    | 4.79 (1.67 – 9.16)  | 0.18 (0.06 – 0.35) | 2  | 2  | 3  |
| Israel                     | 4.72 (1.55 – 8.87)  | 0.19 (0.06 – 0.34) | 6  | 8  | 6  |
| Serbia                     | 4.65 (1.55 – 8.48)  | 0.25 (0.10 – 0.44) | NA | NA | NA |
| Austria                    | 4.53 (1.57 – 8.27)  | 0.21 (0.07 – 0.38) | 1  | 5  | 1  |
| Bahrain                    | 4.52 (1.37 – 9.18)  | 0.20 (0.06 – 0.42) | NA | NA | NA |
| Romania                    | 4.52 (1.49 – 8.21)  | 0.24 (0.09 – 0.43) | 6  | 13 | 7  |

|  |                    |                    |    |    |    |
|--|--------------------|--------------------|----|----|----|
| Slovakia   | 4.46 (1.57 – 8.73) | 0.22 (0.08 – 0.39) | 3  | 2  | 5  |
| The Former Yugoslav Republic of Macedonia            | 4.29 (1.47 – 7.87) | 0.22 (0.08 – 0.39) | NA | NA | NA |
| Switzerland  | 4.25 (1.44 – 7.66) | 0.19 (0.06 – 0.36) | 1  | 5  | 1  |
| Lesotho  | 4.24 (1.51 – 7.70) | 0.44 (0.17 – 0.75) | NA | NA | NA |
| Montenegro   | 4.09 (1.47 – 7.32) | 0.21 (0.08 – 0.37) | NA | NA | NA |
| Azerbaijan   | 3.98 (1.37 – 6.95) | 0.22 (0.09 – 0.39) | NA | NA | NA |
| Malta  | 3.82 (1.26 – 7.18) | 0.18 (0.05 – 0.34) | NA | NA | NA |
| United States of America                             | 3.81 (1.12 – 6.98) | 0.19 (0.07 – 0.34) | 74 | 24 | 35 |
| San Marino   | 3.76 (1.21 – 6.88) | 0.16 (0.05 – 0.30) | NA | NA | NA |
| Turkmenistan   | 3.73 (1.32 – 6.86) | 0.23 (0.09 – 0.39) | NA | NA | NA |
| France   | 3.67 (1.28 – 6.85) | 0.16 (0.05 – 0.29) | 2  | 5  | 2  |
| Zimbabwe   | 3.65 (1.31 – 6.13) | 0.47 (0.19 – 0.77) | 7  | 13 | 1  |
| Jordan   | 3.64 (1.28 – 6.63) | 0.16 (0.06 – 0.29) | NA | NA | NA |
| Angola   | 3.58 (1.26 – 6.15) | 0.43 (0.15 – 0.73) | NA | NA | NA |
| Andorra  | 3.54 (1.13 – 6.51) | 0.15 (0.05 – 0.30) | NA | NA | NA |
| Armenia  | 3.51 (1.20 – 6.28) | 0.20 (0.08 – 0.36) | NA | NA | NA |
| Netherlands  | 3.50 (1.18 – 6.69) | 0.16 (0.05 – 0.33) | 11 | 10 | 8  |
| New Zealand  | 3.48 (1.11 – 6.45) | 0.15 (0.06 – 0.28) | 10 | 6  | 10 |
| Poland   | 3.48 (1.08 – 6.95) | 0.17 (0.06 – 0.31) | 4  | 9  | 6  |
| Türkiye  | 3.42 (1.19 – 6.12) | 0.16 (0.06 – 0.28) | 2  | 2  | 2  |
| Democratic People's Republic of Korea                | 3.37 (1.17 – 6.01) | 0.20 (0.07 – 0.36) | NA | NA | NA |
| Argentina  | 3.34 (1.14 – 6.23) | 0.16 (0.06 – 0.28) | 18 | 12 | 11 |
| Bulgaria   | 3.18 (1.07 – 5.72) | 0.19 (0.07 – 0.33) | 3  | 6  | 8  |
| Hungary  | 3.14 (0.98 – 5.73) | 0.17 (0.06 – 0.30) | 1  | 1  | 1  |
| Occupied Palestine                                   | 3.11 (1.07 – 5.66) | 0.13 (0.05 – 0.23) | NA | NA | NA |
| Uruguay  | 3.08 (1.03 – 5.60) | 0.16 (0.06 – 0.28) | NA | NA | NA |
| Germany  | 3.04 (1.00 – 5.81) | 0.15 (0.05 – 0.30) | 8  | 9  | 7  |
| Lebanon  | 2.93 (0.92 – 5.37) | 0.15 (0.05 – 0.26) | NA | NA | NA |
| South Africa   | 2.83 (1.07 – 5.03) | 0.26 (0.10 – 0.44) | 5  | 4  | 4  |
| Afghanistan  | 2.81 (0.95 – 4.96) | 0.37 (0.15 – 0.65) | NA | NA | NA |
| Czech Republic                                       | 2.78 (0.90 – 5.31) | 0.14 (0.04 – 0.26) | NA | NA | NA |
| Iraq   | 2.71 (0.95 – 4.79) | 0.17 (0.07 – 0.29) | NA | NA | NA |
| Mongolia   | 2.65 (0.87 – 5.07) | 0.14 (0.05 – 0.25) | NA | NA | NA |
| Luxembourg   | 2.51 (0.83 – 4.87) | 0.11 (0.04 – 0.22) | 1  | 5  | 1  |
| Denmark  | 2.42 (0.76 – 4.83) | 0.12 (0.04 – 0.22) | 2  | 2  | 2  |
| Monaco   | 2.38 (0.79 – 4.55) | 0.12 (0.04 – 0.24) | NA | NA | NA |
| Finland  | 2.31 (0.72 – 4.75) | 0.11 (0.03 – 0.24) | NA | NA | NA |
| Kazakhstan   | 2.29 (0.81 – 4.33) | 0.15 (0.06 – 0.27) | 1  | 1  | 1  |
| United Kingdom of Great Britain and Northern Ireland | 2.24 (0.72 – 4.27) | 0.10 (0.03 – 0.20) | 31 | 14 | 16 |

|                    |                    |                    |    |    |    |
|--------------------|--------------------|--------------------|----|----|----|
| Lithuania          | 1.90 (0.61 – 3.80) | 0.11 (0.04 – 0.21) | NA | NA | NA |
| Ukraine            | 1.90 (0.67 – 3.58) | 0.12 (0.05 – 0.22) | NA | NA | NA |
| Canada             | 1.89 (0.47 – 3.78) | 0.09 (0.03 – 0.18) | 9  | 6  | 9  |
| Estonia            | 1.76 (0.59 – 3.60) | 0.09 (0.03 – 0.19) | NA | NA | NA |
| Norway             | 1.74 (0.54 – 3.79) | 0.08 (0.02 – 0.16) | NA | NA | NA |
| Latvia             | 1.65 (0.53 – 3.30) | 0.10 (0.03 – 0.20) | NA | NA | NA |
| Belarus            | 1.59 (0.52 – 3.19) | 0.10 (0.03 – 0.19) | NA | NA | NA |
| Belgium            | 1.59 (0.52 – 3.49) | 0.08 (0.02 – 0.15) | 1  | 1  | 1  |
| Sweden             | 1.56 (0.46 – 3.17) | 0.07 (0.02 – 0.15) | NA | NA | NA |
| Iceland            | 1.17 (0.35 – 2.46) | 0.05 (0.01 – 0.10) | NA | NA | NA |
| Russian Federation | 1.08 (0.31 – 2.34) | 0.07 (0.02 – 0.15) | 12 | 12 | 11 |
| American Samoa     | NA                 | NA                 | 1  | 1  | 1  |
| Guadeloupe         | NA                 | NA                 | 2  | 5  | 3  |
| Puerto Rico        | NA                 | NA                 | 2  | 4  | 7  |

NA, not available

Table S10. Summary tables of *Leptospira* serovar isolations and detections in animal host species published 1927-2022, sorted by serogroup, serovar and animal genus and species

| Serogroup | Serovar   | Animal genus and species       | Animal common name       | Animal order    | Animal class | UN country               | Reference |
|-----------|-----------|--------------------------------|--------------------------|-----------------|--------------|--------------------------|-----------|
| Australis | Australis | <i>Apodemus agrarius</i>       | Striped field mouse      | Rodentia        | Mammalia     | China                    | (1)       |
| Australis | Australis | <i>Arvicanthus niloticus</i>   | African grass rat        | Rodentia        | Mammalia     | Nigeria                  | (2)       |
| Australis | Australis | <i>Bos taurus</i>              | Cattle                   | Artiodactyla    | Mammalia     | Japan, Malaysia          | (3-7)     |
| Australis | Australis | <i>Canis lupus</i>             | Dog                      | Carnivora       | Mammalia     | Italy                    | (8)       |
| Australis | Australis | <i>Equus caballus</i>          | Horse                    | Perissodactyla  | Mammalia     | Philippines              | (9)       |
| Australis | Australis | <i>Erinaceus europaeus</i>     | Hedgehog                 | Eulipotyphla    | Mammalia     | Belgium, Israel, Italy   | (10-12)   |
| Australis | Australis | <i>Herpestes auropunctatus</i> | Lesser Indian mongoose   | Carnivora       | Mammalia     | Guadeloupe               | (13)      |
| Australis | Australis | <i>Isoodon macrourus</i>       | Northern brown bandicoot | Peramelemorphia | Mammalia     | Australia                | (14)      |
| Australis | Australis | <i>Mus musculus</i>            | House mouse              | Rodentia        | Mammalia     | Australia                | (14)      |
| Australis | Australis | <i>Myocastor coypus</i>        | Nutria                   | Rodentia        | Mammalia     | China                    | (15)      |
| Australis | Australis | <i>Nectomys squamipes</i>      | South American water rat | Rodentia        | Mammalia     | Brazil                   | (16)      |
| Australis | Australis | <i>Perameles nasuta</i>        | Long-nosed bandicoot     | Peramelemorphia | Mammalia     | Australia                | (14)      |
| Australis | Australis | <i>Procyon lotor</i>           | Raccoon                  | Carnivora       | Mammalia     | United States of America | (17, 18)  |
| Australis | Australis | <i>Procyon spp.</i>            | Raccoon                  | Carnivora       | Mammalia     | United States of America | (19)      |
| Australis | Australis | <i>Rat spp.</i>                | Field rat                | Rodentia        | Mammalia     | Thailand                 | (20, 21)  |



|                  |                   |                                     |                           |                |              |   |              |
|------------------|-------------------|-------------------------------------|---------------------------|----------------|--------------|---|--------------|
| <b>Australis</b> | <b>Australis</b>  | <i>Rat spp.</i>                     | Rat                       | Rodentia       | Mam<br>malia | Thailand  | (22)         |
| <b>Australis</b> | <b>Australis</b>  | <i>Rattus fuscipes</i>              | Bush rat                  | Rodentia       | Mam<br>malia | Australia   | (14, 23)     |
| <b>Australis</b> | <b>Australis</b>  | <i>Rattus leucopus</i>              | Cape York rat             | Rodentia       | Mam<br>malia | Australia   | (23)         |
| <b>Australis</b> | <b>Australis</b>  | <i>Rattus losea</i>                 | Lesser rice field rat     | Rodentia       | Mam<br>malia | China   | (1)          |
| <b>Australis</b> | <b>Australis</b>  | <i>Rattus norvegicus</i>            | Norwegian rat             | Rodentia       | Mam<br>malia | American Samoa, China, United States of America   | (1, 24, 25)  |
| <b>Australis</b> | <b>Australis</b>  | <i>Rattus rattus</i>                | Black rat                 | Rodentia       | Mam<br>malia | Australia   | (14)         |
| <b>Australis</b> | <b>Australis</b>  | <i>Rattus sordidus</i>              | Canefield rat             | Rodentia       | Mam<br>malia | Australia   | (14, 23)     |
| <b>Australis</b> | <b>Australis</b>  | <i>Rattus spp.</i>                  | Rat                       | Rodentia       | Mam<br>malia | Australia, China  | (15, 23, 26) |
| <b>Australis</b> | <b>Australis</b>  | <i>Sundamys muelleri</i>            | Mueller's rat             | Rodentia       | Mam<br>malia | Malaysia  | (27)         |
| <b>Australis</b> | <b>Australis</b>  | <i>Uromys caudimaculatus</i>        | Giant white-tailed rat    | Rodentia       | Mam<br>malia | Australia   | (28)         |
| <b>Australis</b> | <b>Australis</b>  | <i>Uromys spp.</i>                  | Giant naked-tailed rats   | Rodentia       | Mam<br>malia | Australia   | (23)         |
| <b>Australis</b> | <b>Australis</b>  | Not stated                          | Rodent                    | Rodentia       | Mam<br>malia | Australia, Poland   | (29, 30)     |
| <b>Australis</b> | <b>Bajan</b>      | <i>Bufo marinus</i>                 | Giant marine toad         | Anura          | Amph<br>ibia | Barbados  | (31)         |
| <b>Australis</b> | <b>Bajan</b>      | <i>Eleutherodactylus johnstonei</i> | Whistling frog            | Anura          | Amph<br>ibia | Barbados  | (31, 32)     |
| <b>Australis</b> | <b>Bangkok</b>    | <i>Canis lupus</i>                  | Dog                       | Carnivora      | Mam<br>malia | Thailand  | (33)         |
| <b>Australis</b> | <b>Bratislava</b> | <i>Apodemus flavicollis</i>         | Yellow-necked field mouse | Rodentia       | Mam<br>malia | Croatia   | (34)         |
| <b>Australis</b> | <b>Bratislava</b> | <i>Apodemus sylvaticus</i>          | Common field mouse        | Rodentia       | Mam<br>malia | Croatia   | (34)         |
| <b>Australis</b> | <b>Bratislava</b> | <i>Bos taurus</i>                   | Cattle                    | Artiodactyla   | Mam<br>malia | Nigeria   | (35)         |
| <b>Australis</b> | <b>Bratislava</b> | <i>Equus caballus</i>               | Horse                     | Perissodactyla | Mam<br>malia | Austria, Germany, Italy, Luxembourg, Netherlands, Portugal, Switzerland, United Kingdom of Great Britain and Northern Ireland | (36-39)      |
| <b>Australis</b> | <b>Bratislava</b> | <i>Erinaceus europaeus</i>          | European hedgehog         | Eulipotyphla   | Mam<br>malia | Bulgaria  | (40)         |

|                  |                   |                                |                                   |                |          |   |                  |
|------------------|-------------------|--------------------------------|-----------------------------------|----------------|----------|---|------------------|
| <b>Australis</b> | <b>Bratislava</b> | <i>Erinaceus europaeus</i>     | Hedgehog                          | Eulipotyphla   | Mammalia | Italy, Netherlands, Russian Federation, United Kingdom of Great Britain and Northern Ireland                                  | (11, 39, 41, 42) |
| <b>Australis</b> | <b>Bratislava</b> | <i>Ovis aries</i>              | Sheep                             | Artiodactyla   | Mammalia | United Kingdom of Great Britain and Northern Ireland  | (39, 43)         |
| <b>Australis</b> | <b>Bratislava</b> | <i>Rattus norvegicus</i>       | Norwegian rat                     | Rodentia       | Mammalia | United Kingdom of Great Britain and Northern Ireland  | (39)             |
| <b>Australis</b> | <b>Bratislava</b> | <i>Sus scrofa</i>              | Pig                               | Artiodactyla   | Mammalia | Brazil, Germany, United Kingdom of Great Britain and Northern Ireland, United States of America                               | (44-49)          |
| <b>Australis</b> | <b>Fugis</b>      | <i>Bos taurus</i>              | Cattle                            | Artiodactyla   | Mammalia | Zimbabwe  | (50)             |
| <b>Australis</b> | <b>Jalna</b>      | <i>Apodemus flavicollis</i>    | Yellow-necked field mouse         | Rodentia       | Mammalia | Bulgaria, Croatia   | (40, 51)         |
| <b>Australis</b> | <b>Jalna</b>      | <i>Apodemus mystacinus</i>     | Eastern broad toothed field mouse | Rodentia       | Mammalia | Bulgaria  | (40)             |
| <b>Australis</b> | <b>Jalna</b>      | <i>Apodemus sylvaticus</i>     | Common field mouse                | Rodentia       | Mammalia | Bulgaria, Croatia, Poland   | (40, 51, 52)     |
| <b>Australis</b> | <b>Jalna</b>      | <i>Arvicola terrestris</i>     | European water vole               | Rodentia       | Mammalia | Poland  | (52)             |
| <b>Australis</b> | <b>Jalna</b>      | <i>Sorex araneus</i>           | Common shrew                      | Eulipotyphla   | Mammalia | Poland  | (52)             |
| <b>Australis</b> | <b>Jalna</b>      | <i>Sorex minutus</i>           | Eurasian pygmy shrew              | Eulipotyphla   | Mammalia | Poland  | (52)             |
| <b>Australis</b> | <b>Lora</b>       | <i>Apodemus flavicollis</i>    | Yellow-necked field mouse         | Rodentia       | Mammalia | Bulgaria, Croatia   | (40, 53)         |
| <b>Australis</b> | <b>Lora</b>       | <i>Apodemus mystacinus</i>     | Eastern broad toothed field mouse | Rodentia       | Mammalia | Georgia   | (54)             |
| <b>Australis</b> | <b>Lora</b>       | <i>Apodemus sylvaticus</i>     | Common field mouse                | Rodentia       | Mammalia | Bulgaria, Georgia   | (40, 55, 56)     |
| <b>Australis</b> | <b>Lora</b>       | <i>Clethrionomys glareolus</i> | Bank vole                         | Rodentia       | Mammalia | Croatia   | (57)             |
| <b>Australis</b> | <b>Lora</b>       | <i>Equus caballus</i>          | Horse                             | Perissodactyla | Mammalia | Austria, Germany, Italy, Luxembourg, Netherlands, Portugal, Switzerland, United Kingdom of Great Britain and Northern Ireland | (36, 58)         |
| <b>Australis</b> | <b>Lora</b>       | <i>Mastomys spp.</i>           | Multimammate rat                  | Rodentia       | Mammalia | United Republic of Tanzania   | (59)             |
| <b>Australis</b> | <b>Lora</b>       | <i>Microtus arvalis</i>        | Common vole                       | Rodentia       | Mammalia | Bulgaria  | (40, 56)         |
| <b>Australis</b> | <b>Lora</b>       | <i>Mus musculus</i>            | House mouse                       | Rodentia       | Mammalia | Bulgaria  | (56)             |

|                   |                       |                                |                            |                |          |   |                     |
|-------------------|-----------------------|--------------------------------|----------------------------|----------------|----------|---|---------------------|
| <b>Australis</b>  | <b>Lora</b>           | <i>Ondatra zibethicus</i>      | Muskrat                    | Rodentia       | Mamalia  | Netherlands   | (60)                |
| <b>Australis</b>  | <b>Lora</b>           | <i>Rattus rattus</i>           | Black rat                  | Rodentia       | Mamalia  | Bulgaria  | (40)                |
| <b>Australis</b>  | <b>Lora</b>           | <i>Sus scrofa</i>              | Pig                        | Artiodactyla   | Mamalia  | Netherlands   | (61)                |
| <b>Australis</b>  | <b>Muenchen</b>       | <i>Apodemus flavicollis</i>    | Yellow-necked field mouse  | Rodentia       | Mamalia  | Croatia   | (34)                |
| <b>Australis</b>  | <b>Muenchen</b>       | <i>Apodemus sylvaticus</i>     | Common field mouse         | Rodentia       | Mamalia  | Croatia, United Kingdom of Great Britain and Northern Ireland   | (34, 39)            |
| <b>Australis</b>  | <b>Muenchen</b>       | <i>Clethrionomys glareolus</i> | Bank vole                  | Rodentia       | Mamalia  | United Kingdom of Great Britain and Northern Ireland  | (39, 62)            |
| <b>Australis</b>  | <b>Muenchen</b>       | <i>Equus caballus</i>          | Horse                      | Perissodactyla | Mamalia  | Austria, Germany, Italy, Luxembourg, Netherlands, Portugal, Switzerland, United Kingdom of Great Britain and Northern Ireland | (36)                |
| <b>Australis</b>  | <b>Muenchen</b>       | <i>Microtus agrestis</i>       | Short tailed vole          | Rodentia       | Mamalia  | United Kingdom of Great Britain and Northern Ireland  | (39, 62)            |
| <b>Australis</b>  | <b>Muenchen</b>       | <i>Sciurus carolinensis</i>    | Grey squirrel              | Rodentia       | Mamalia  | United Kingdom of Great Britain and Northern Ireland  | (39)                |
| <b>Australis</b>  | <b>Muenchen</b>       | <i>Sus scrofa</i>              | Pig                        | Artiodactyla   | Mamalia  | United Kingdom of Great Britain and Northern Ireland  | (39, 44-46, 63, 64) |
| <b>Australis</b>  | <b>Nicaragua</b>      | <i>Mustela spp.</i>            | Weasel                     | Carnivora      | Mamalia  | Nicaragua   | (65)                |
| <b>Australis</b>  | <b>Peruviana</b>      | <i>Bufo marinus</i>            | Giant marine toad          | Anura          | Amphibia | Grenada   | (66)                |
| <b>Australis</b>  | <b>Rushan</b>         | <i>Bombina orientalis</i>      | Oriental fire bellied toad | Anura          | Amphibia | China   | (67)                |
| <b>Australis</b>  | <b>Soteropolitana</b> | <i>Cavia aperea</i>            | Brazilian guinea pig       | Rodentia       | Mamalia  | Brazil  | (68)                |
| <b>Australis</b>  | <b>Soteropolitana</b> | <i>Zygodontomys lasiurus</i>   | Hairy tailed akodont       | Rodentia       | Mamalia  | Brazil  | (68)                |
| <b>Autumnalis</b> | <b>Autumnalis</b>     | <i>Apodemus speciosus</i>      | Large japanese field mouse | Rodentia       | Mamalia  | Japan   | (69)                |
| <b>Autumnalis</b> | <b>Autumnalis</b>     | <i>Bandicota bengalensis</i>   | Lesser bandicoot rat       | Rodentia       | Mamalia  | India, Thailand   | (70, 71)            |
| <b>Autumnalis</b> | <b>Autumnalis</b>     | <i>Bos taurus</i>              | Cattle                     | Artiodactyla   | Mamalia  | Japan   | (6, 7)              |
| <b>Autumnalis</b> | <b>Autumnalis</b>     | <i>Bufo marinus</i>            | Giant marine toad          | Anura          | Amphibia | Trinidad and Tobago   | (66, 72)            |
| <b>Autumnalis</b> | <b>Autumnalis</b>     | <i>Procyon lotor</i>           | Raccoon                    | Carnivora      | Mamalia  | United States of America  | (73)                |

|                   |                   |                                     |                        |                  |              |                               |                  |
|-------------------|-------------------|-------------------------------------|------------------------|------------------|--------------|-------------------------------|------------------|
| <b>Autumnalis</b> | <b>Autumnalis</b> | <i>Rat spp.</i>                     | Field rat              | Rodentia         | Mam<br>malia | Thailand                      | (20, 21)         |
| <b>Autumnalis</b> | <b>Autumnalis</b> | <i>Rat spp.</i>                     | Rat                    | Rodentia         | Mam<br>malia | Thailand                      | (22)             |
| <b>Autumnalis</b> | <b>Autumnalis</b> | <i>Rattus rattus</i>                | Black rat              | Rodentia         | Mam<br>malia | Barbados, India, Thailand     | (70, 74-76)      |
| <b>Autumnalis</b> | <b>Bim</b>        | <i>Bufo marinus</i>                 | Giant marine toad      | Anura            | Amph<br>ibia | Barbados                      | (31, 77)         |
| <b>Autumnalis</b> | <b>Bim</b>        | <i>Canis lupus</i>                  | Dog                    | Carnivora        | Mam          | Barbados                      | (78)             |
| <b>Autumnalis</b> | <b>Bim</b>        | <i>Eleutherodactylus johnstonei</i> | Whistling frog         | Anura            | Amph<br>ibia | Barbados                      | (31, 32)         |
| <b>Autumnalis</b> | <b>Bim</b>        | <i>Rattus norvegicus</i>            | Norwegian rat          | Rodentia         | Mam<br>malia | Barbados                      | (79)             |
| <b>Autumnalis</b> | <b>Bulgarica</b>  | <i>Rattus rattus</i>                | Black rat              | Rodentia         | Mam<br>malia | China                         | (80)             |
| <b>Autumnalis</b> | <b>Fortbragg</b>  | <i>Herpestes auropunctatus</i>      | Lesser Indian mongoose | Carnivora        | Mam<br>malia | Barbados                      | (76, 81)         |
| <b>Autumnalis</b> | <b>Fortbragg</b>  | <i>Rattus norvegicus</i>            | Norwegian rat          | Rodentia         | Mam<br>malia | Barbados                      | (76)             |
| <b>Autumnalis</b> | <b>Fortbragg</b>  | <i>Rattus rattus</i>                | Black rat              | Rodentia         | Mam<br>malia | Barbados                      | (76)             |
| <b>Autumnalis</b> | <b>Fortbragg</b>  | <i>Rattus rattus</i>                | Rat                    | Rodentia         | Mam<br>malia | Barbados                      | (82)             |
| <b>Autumnalis</b> | <b>Fortbragg</b>  | <i>Rattus spp.</i>                  | Rat                    | Rodentia         | Mam<br>malia | Barbados                      | (81)             |
| <b>Autumnalis</b> | <b>Lambwe</b>     | <i>Arvicanthus niloticus</i>        | African grass rat      | Rodentia         | Mam<br>malia | Kenya                         | (83)             |
| <b>Autumnalis</b> | <b>Mooris</b>     | <i>Rattus rattus</i>                | Black rat              | Rodentia         | Mam<br>malia | China                         | (80)             |
| <b>Ballum</b>     | <b>Arborea</b>    | <i>Erinaceus europaeus</i>          | Hedgehog               | Eulipotyp<br>hla | Mam<br>malia | Italy                         | (11)             |
| <b>Ballum</b>     | <b>Arborea</b>    | <i>Mus musculus</i>                 | House mouse            | Rodentia         | Mam<br>malia | Argentina, Portugal           | (84-86)          |
| <b>Ballum</b>     | <b>Arborea</b>    | <i>Mus spretus</i>                  | Algerian mouse         | Rodentia         | Mam<br>malia | Portugal                      | (87)             |
| <b>Ballum</b>     | <b>Arborea</b>    | <i>Rattus norvegicus</i>            | Norwegian rat          | Rodentia         | Mam<br>malia | Argentina, Barbados, Portugal | (79, 86, 87)     |
| <b>Ballum</b>     | <b>Arborea</b>    | <i>Rattus rattus</i>                | Black rat              | Rodentia         | Mam<br>malia | Barbados, Israel, Portugal    | (79, 85, 87, 88) |

|        |         |                                |                            |                      |               |   |  |
|--------|---------|--------------------------------|----------------------------|----------------------|---------------|---|--|
| Ballum | Arborea | <i>Rattus spp.</i>             | Rat                        | Rodentia             | Mam<br>malia  | Australia   | (89)                                   |
| Ballum | Arborea | Not stated                     | Rodent                     | Rodentia             | Mam<br>malia  | Australia   | (23)                                   |
| Ballum | Ballum  | <i>Akodon</i>                  | Montane grass mouse        | Rodentia             | Mam<br>malia  | Brazil  | (90)                                   |
| Ballum | Ballum  | <i>arviculoides</i>            |                            | Rodentia             | Mam<br>malia  | Nigeria   | (2)                                    |
| Ballum | Ballum  | <i>Arvicanthus niloticus</i>   | African grass rat          | Rodentia             | Mam<br>malia  | United States of America  | (91)                                   |
| Ballum | Ballum  | <i>Blarina brevicauda</i>      | Short tailed shrew         | Eulipotyp<br>hla     | Mam<br>malia  | Malaysia, New Zealand   | (4, 92)                                |
| Ballum | Ballum  | <i>Bos taurus</i>              | Cattle                     | Artiodact<br>yla     | Mam<br>malia  | Trinidad and Tobago   | (66, 72)                               |
| Ballum | Ballum  | <i>Caluromys philander</i>     | Bare-tailed woolly opossum | Didelphi<br>morphia  | Mam<br>malia  | United States of America  | (93)                                   |
| Ballum | Ballum  | <i>Canis lupus</i>             | Dog                        | Carnivora            | Mam<br>malia  | United States of America  | (18, 94-96)                            |
| Ballum | Ballum  | <i>Didelphis marsupialis</i>   | Common opossum             | Didelphi<br>morphia  | Mam<br>malia  | United States of America  | (97, 98)                               |
| Ballum | Ballum  | <i>Didelphis virginiana</i>    | Virginia opossum           | Didelphi<br>morphia  | Mam<br>malia  | Israel, New Zealand   | (99, 100)                              |
| Ballum | Ballum  | <i>Erinaceus europaeus</i>     | Hedgehog                   | Eulipotyp<br>hla     | Mam<br>malia  | United States of America  | (18)                                   |
| Ballum | Ballum  | <i>Felis rufa</i>              | Wild cat                   | Carnivora            | Mam<br>malia  | United States of America  | (24)                                   |
| Ballum | Ballum  | <i>Herpestes auropunctatus</i> | Lesser Indian mongoose     | Carnivora            | Mam<br>malia  | United States of America  | (94)                                   |
| Ballum | Ballum  | <i>Heterodon platyrhinus</i>   | Eastern hog-nosed snake    | Squamata<br>Didelphi | Reptil<br>Mam | Trinidad and Tobago   | (66, 72)                               |
| Ballum | Ballum  | <i>Marmosa mitis</i>           | Pouchless opossum          | morphia              | Mam<br>malia  | United States of America  | (18, 95, 101-104)                      |
| Ballum | Ballum  | <i>Mephitis mephitis</i>       | Striped skunk              | Carnivora            | Mam<br>malia  | United States of America  | (105)                                  |
| Ballum | Ballum  | <i>Microtus pennsylvanicus</i> | Meadow vole                | Rodentia             | Mam<br>malia  | Brazil, Denmark, Guadeloupe, Mexico, New Zealand, Trinidad and Tobago, United States of America | (13, 16, 24, 72, 94, 98, 100, 106-113) |
| Ballum | Ballum  | <i>Mus musculus</i>            | House mouse                | Rodentia             | Mam<br>malia  | United States of America  | (94)                                   |
| Ballum | Ballum  | <i>Peromyscus maniculatus</i>  | Deer mouse                 | Rodentia             | Mam<br>malia  | United States of America  | (109)                                  |
| Ballum | Ballum  | <i>Peromyscus polionotus</i>   | Oldfield mouse             | Rodentia             | Mam<br>malia  | United States of America  |  |

|          |              |                                 |                             |                 |          |   |                                      |
|----------|--------------|---------------------------------|-----------------------------|-----------------|----------|---|--------------------------------------|
| Ballum   | Ballum       | <i>Philander opossum</i>        | Gray four-eyed opossum      | Didelphimorphia | Mammalia | Brazil  | (16)                                 |
| Ballum   | Ballum       | <i>Procyon lotor</i>            | Raccoon                     | Carnivora       | Mammalia | United States of America  | (18)                                 |
| Ballum   | Ballum       | <i>Rattus exulans</i>           | Polynesian rat              | Rodentia        | Mammalia | United States of America  | (24, 106)                            |
| Ballum   | Ballum       | <i>Rattus norvegicus</i>        | Norwegian rat               | Rodentia        | Mammalia | Israel, Italy, New Zealand, Puerto Rico, Spain, United States of America    | (24, 100, 111, 113-118)              |
| Ballum   | Ballum       | <i>Rattus rattus</i>            | Black rat                   | Rodentia        | Mammalia | Grenada, Israel, New Zealand, Trinidad and Tobago, United States of America | (24, 66, 72, 88, 106, 111, 113, 118) |
| Ballum   | Ballum       | <i>Rattus spp.</i>              | Rat                         | Rodentia        | Mammalia | Canada  | (119)                                |
| Ballum   | Ballum       | <i>Urocyon cinereoargenteus</i> | Gray fox                    | Carnivora       | Mammalia | United States of America  | (18)                                 |
| Ballum   | Ballum       | Not stated                      | Opossum                     | Didelphimorphia | Mammalia | United States of America  | (120)                                |
| Ballum   | Castellonis  | <i>Mus musculus</i>             | House mouse                 | Rodentia        | Mammalia | Barbados  | (76)                                 |
| Ballum   | Castellonis  | <i>Ovis aries</i>               | Sheep                       | Artiodactyla    | Mammalia | Argentina   | (121)                                |
| Ballum   | Kenya        | <i>Cricetomys gambianus</i>     | Giant pouched rat           | Rodentia        | Mammalia | United Republic of Tanzania   | (122)                                |
| Ballum   | Kenya        | <i>Cricetomys spp.</i>          | Giant pouched rat           | Rodentia        | Mammalia | United Republic of Tanzania   | (59)                                 |
| Ballum   | Kenya        | <i>Crocidura spp.</i>           | Shrew                       | Eulipotyphla    | Mammalia | United Republic of Tanzania   | (59)                                 |
| Ballum   | Kenya        | <i>Mastomys spp.</i>            | Multimammate rat            | Rodentia        | Mammalia | United Republic of Tanzania   | (59)                                 |
| Ballum   | Kenya        | <i>Saccostomus campestris</i>   | South African pouched mouse | Rodentia        | Mammalia | Kenya   | (83)                                 |
| Bataviae | Argentinesis | <i>Chaetophractus villosus</i>  | Big hairy armadillo         | Cingulata       | Mammalia | Argentina   | (123-125)                            |
| Bataviae | Balboa       | <i>Proechimys semispinosus</i>  | Spiny rat                   | Rodentia        | Mammalia | Panama  | (65)                                 |
| Bataviae | Bataviae     | <i>Apodemus agrarius</i>        | Striped field mouse         | Rodentia        | Mammalia | Croatia   | (34)                                 |
| Bataviae | Bataviae     | <i>Arvicola terrestris</i>      | European water vole         | Rodentia        | Mammalia | Bulgaria  | (126)                                |
| Bataviae | Bataviae     | <i>Chaetophractus villosus</i>  | Big hairy armadillo         | Cingulata       | Mammalia | Argentina   | (123, 124)                           |

|          |              |                                |                        |                 |         |  |                 |
|----------|--------------|--------------------------------|------------------------|-----------------|---------|--|-----------------|
| Bataviae | Bataviae     | <i>Felis catus</i>             | Cat                    | Carnivora       | Mamalia | Indonesia, Malaysia                                  | (127, 128)      |
| Bataviae | Bataviae     | <i>Leopoldamys sabanus</i>     | Andaman rat            | Rodentia        | Mamalia | Malaysia   | (27)            |
| Bataviae | Bataviae     | <i>Rat spp.</i>                | Field rat              | Rodentia        | Mamalia | Thailand   | (20, 21)        |
| Bataviae | Bataviae     | <i>Rat spp.</i>                | Rat                    | Rodentia        | Mamalia | Thailand   | (22)            |
| Bataviae | Bataviae     | <i>Rattus exulans</i>          | Polynesian rat         | Rodentia        | Mamalia | Malaysia   | (129, 130)      |
| Bataviae | Bataviae     | <i>Rattus norvegicus</i>       | Norwegian rat          | Rodentia        | Mamalia | Malaysia, Viet Nam                                   | (129-131)       |
| Bataviae | Bataviae     | <i>Rattus rattus</i>           | Black rat              | Rodentia        | Mamalia | Malaysia   | (129, 130, 132) |
| Bataviae | Bataviae     | <i>Rattus spp.</i>             | Rat                    | Rodentia        | Mamalia | China, Philippines, Thailand                         | (26, 133, 134)  |
| Bataviae | Bataviae     | <i>Sundamys muelleri</i>       | Mueller's rat          | Rodentia        | Mamalia | Malaysia   | (27)            |
| Bataviae | Bataviae     | <i>Sus scrofa</i>              | Pig                    | Artiodactyla    | Mamalia | Peru   | (135)           |
| Bataviae | Bataviae     | Not stated                     | Rodent                 | Rodentia        | Mamalia | Poland   | (29)            |
| Bataviae | Brasiliensis | <i>Didelphis marsupialis</i>   | Common opossum         | Didelphimorphia | Mamalia | Brazil   | (136)           |
| Bataviae | Brasiliensis | <i>Herpestes auropunctatus</i> | Lesser Indian mongoose | Carnivora       | Mamalia | Grenada  | (66)            |
| Bataviae | Brasiliensis | <i>Sus scrofa</i>              | Pig                    | Artiodactyla    | Mamalia | United Kingdom of Great Britain and Northern Ireland | (63)            |
| Bataviae | Claytoni     | <i>Proechimys semispinosus</i> | Spiny rat              | Rodentia        | Mamalia | Panama   | (65)            |
| Bataviae | Djatzi       | <i>Herpestes auropunctatus</i> | Lesser Indian mongoose | Carnivora       | Mamalia | Puerto Rico  | (115)           |
| Bataviae | Djatzi       | <i>Mus musculus</i>            | House mouse            | Rodentia        | Mamalia | Puerto Rico  | (115)           |
| Bataviae | Djatzi       | <i>Rattus rattus</i>           | Black rat              | Rodentia        | Mamalia | Puerto Rico  | (115)           |
| Bataviae | Kobbe        | <i>Proechimys semispinosus</i> | Spiny rat              | Rodentia        | Mamalia | Panama   | (137)           |
| Bataviae | Kobbe        | <i>Sus scrofa</i>              | Pig                    | Artiodactyla    | Mamalia | Peru   | (138)           |

|                 |                  |                                |                                   |                     |                    |   |                       |
|-----------------|------------------|--------------------------------|-----------------------------------|---------------------|--------------------|---|-----------------------|
| <b>Bataviae</b> | <b>Losbanos</b>  | <i>Rat spp.</i>                | Rat                               | Rodentia            | Mam<br>malia       | Philippines   | (139)                 |
| <b>Bataviae</b> | <b>Losbanos</b>  | <i>Rattus norvegicus</i>       | Norwegian rat                     | Rodentia            | Mam<br>malia       | Philippines   | (140)                 |
| <b>Bataviae</b> | <b>Losbanos</b>  | <i>Rattus tanezumii</i>        | Oriental house rat                | Rodentia            | Artiodact<br>malia | Philippines   | (140)                 |
| <b>Bataviae</b> | <b>Paidjan</b>   | <i>Bos taurus</i>              | Cattle                            | yla                 | Mam<br>malia       | Zimbabwe  | (50, 141)             |
| <b>Bataviae</b> | <b>Paidjan</b>   | <i>Canis lupus</i>             | Dog                               | Carnivora           | Mam<br>malia       | Thailand  | (142)                 |
| <b>Bataviae</b> | <b>Paidjan</b>   | <i>Chaetophractus villosus</i> | Big hairy armadillo               | Cingulata           | Mam<br>malia       | Argentina   | (123, 124)            |
| <b>Bataviae</b> | <b>Paidjan</b>   | <i>Didelphis albiventris</i>   | White eared opossum               | Didelphi<br>morphia | Mam<br>malia       | Argentina   | (143)                 |
| <b>Bataviae</b> | <b>Paidjan</b>   | <i>Myocastor coypus</i>        | Nutria                            | Rodentia            | Mam<br>malia       | United States of America  | (144)                 |
| <b>Bataviae</b> | <b>Rioja</b>     | <i>Philander opossum</i>       | Gray four-eyed opossum            | Didelphi<br>morphia | Mam<br>malia       | Peru  | (145)                 |
| <b>Canicola</b> | <b>Benjamini</b> | <i>Rattus exulans</i>          | Polynesian rat                    | Rodentia            | Mam<br>malia       | Malaysia  | (27)                  |
| <b>Canicola</b> | <b>Bindjei</b>   | <i>Melomys cervinipes</i>      | Fawn-footed mosaic-tailed rat     | Rodentia            | Mam<br>malia       | Australia   | (28)                  |
| <b>Canicola</b> | <b>Bindjei</b>   | <i>Melomys lutillus</i>        | Papua grassland mosaic-tailed rat | Rodentia            | Mam<br>malia       | Australia   | (14)                  |
| <b>Canicola</b> | <b>Broomi</b>    | <i>Isoodon macrourus</i>       | Northern brown bandicoot          | Peramele<br>morphia | Mam<br>malia       | Australia   | (14)                  |
| <b>Canicola</b> | <b>Broomi</b>    | <i>Rattus rattus</i>           | Black rat                         | Rodentia            | Mam<br>malia       | Australia   | (14)                  |
| <b>Canicola</b> | <b>Canicola</b>  | <i>Akodon azarae</i>           | Azara's grass mouse               | Rodentia            | Artiodact<br>malia | Argentina   | (146)                 |
| <b>Canicola</b> | <b>Canicola</b>  | <i>Bos taurus</i>              | Cattle                            | yla                 | Mam<br>malia       | Argentina, Brazil, Malaysia, Nigeria, United States of America  | (4, 5, 35, 147-150)   |
| <b>Canicola</b> | <b>Canicola</b>  | <i>Canis lupus</i>             | Dog                               | Carnivora           | Mam<br>malia       | Argentina, Brazil, China, Georgia, India, Indonesia, Italy, Japan, Malaysia, Netherlands, Russian Federation, South Africa, Trinidad and Tobago, United States of America | (1, 72, 130, 151-173) |
| <b>Canicola</b> | <b>Canicola</b>  | <i>Chaetophractus villosus</i> | Big hairy armadillo               | Cingulata           | Mam<br>malia       | Argentina   | (123)                 |
| <b>Canicola</b> | <b>Canicola</b>  | <i>Conepatus semistriatus</i>  | Hog nosed skunk                   | Carnivora           | Mam<br>malia       | Nicaragua   | (174)                 |



|                  |                     |                                 |                             |                     |              |  |                          |
|------------------|---------------------|---------------------------------|-----------------------------|---------------------|--------------|--|--------------------------|
| <b>Canicola</b>  | <b>Canicola</b>     | <i>Cricetomys spp.</i>          | Giant pouched rat           | Rodentia            | Mam<br>malia | United Republic of Tanzania  | (59)                     |
| <b>Canicola</b>  | <b>Canicola</b>     | <i>Erinaceus europaeus</i>      | Hedgehog                    | Eulipotyp<br>hla    | Mam<br>malia | Israel   | (12, 99)                 |
| <b>Canicola</b>  | <b>Canicola</b>     | <i>Felis catus</i>              | Cat                         | Carnivora           | Mam<br>malia | Trinidad and Tobago  | (72, 168)                |
| <b>Canicola</b>  | <b>Canicola</b>     | <i>Hemiechinus auritus</i>      | Long eared<br>hedgehog      | Eulipotyp<br>hla    | Mam<br>malia | Israel   | (99)                     |
| <b>Canicola</b>  | <b>Canicola</b>     | <i>Herpestes auropunctatus</i>  | Lesser Indian<br>mongoose   | Carnivora           | Mam<br>malia | Trinidad and Tobago  | (66, 72)                 |
| <b>Canicola</b>  | <b>Canicola</b>     | <i>Mephitis mephitis</i>        | Striped skunk               | Carnivora           | Mam<br>malia | United States of America   | (102, 103, 175)          |
| <b>Canicola</b>  | <b>Canicola</b>     | <i>Rattus exulans</i>           | Polynesian rat              | Rodentia            | Mam<br>malia | Malaysia   | (27)                     |
| <b>Canicola</b>  | <b>Canicola</b>     | <i>Rattus norvegicus</i>        | Norwegian rat               | Rodentia            | Mam<br>malia | Brazil   | (176, 177)               |
| <b>Canicola</b>  | <b>Canicola</b>     | <i>Rattus rattus</i>            | Black rat                   | Rodentia            | Mam<br>malia | Egypt  | (178)                    |
| <b>Canicola</b>  | <b>Canicola</b>     | <i>Rattus spp.</i>              | Rat                         | Rodentia            | Mam<br>malia | China  | (26)                     |
| <b>Canicola</b>  | <b>Canicola</b>     | <i>Spilogale putorius</i>       | Eastern spotted<br>skunk    | Carnivora           | Mam<br>malia | Nicaragua  | (174)                    |
| <b>Canicola</b>  | <b>Canicola</b>     | <i>Sus scrofa</i>               | Pig                         | Artiodact<br>yla    | Mam<br>malia | Brazil, Malaysia, Peru, South Africa, Sri Lanka,<br>United States of America | (162, 172, 173, 179-181) |
| <b>Canicola</b>  | <b>Canicola</b>     | <i>Urocyon cinereoargenteus</i> | Gray fox                    | Carnivora           | Mam<br>malia | Nicaragua  | (174)                    |
| <b>Canicola</b>  | <b>Galtoni</b>      | <i>Bos taurus</i>               | Cattle                      | Artiodact<br>yla    | Mam<br>malia | Argentina  | (182)                    |
| <b>Canicola</b>  | <b>Kuwait</b>       | <i>Rattus norvegicus</i>        | Norwegian rat               | Rodentia            | Mam<br>malia | Madagascar   | (183)                    |
| <b>Canicola</b>  | <b>Kuwait</b>       | <i>Rattus rattus</i>            | Black rat                   | Rodentia            | Mam<br>malia | Madagascar   | (183)                    |
| <b>Canicola</b>  | <b>Portlandvere</b> | <i>Canis lupus</i>              | Dog                         | Carnivora           | Mam<br>malia | Trinidad and Tobago  | (72, 168)                |
| <b>Canicola</b>  | <b>Schueffneri</b>  | <i>Rattus exulans</i>           | Polynesian rat              | Rodentia            | Mam<br>malia | Malaysia   | (27)                     |
| <b>Canicola</b>  | <b>Schueffneri</b>  | <i>Rattus rajah</i>             | Red spiny rat               | Rodentia            | Mam<br>malia | Malaysia   | (71)                     |
| <b>Celledoni</b> | <b>Celledoni</b>    | <i>Isoodon macrourus</i>        | Northern brown<br>bandicoot | Peramele<br>morphia | Mam<br>malia | Australia  | (14, 28)                 |

|               |               |                                   |                           |              |         |  |                   |
|---------------|---------------|-----------------------------------|---------------------------|--------------|---------|--|-------------------|
| Celledoni     | Celledoni     | <i>Melomys cervinipes</i>         | Giant white-tailed rat    | Rodentia     | Mamalia | Australia  | (14)              |
| Celledoni     | Celledoni     | <i>Rattus argentiventer</i>       | Rice-field rat            | Rodentia     | Mamalia | Malaysia   | (27)              |
| Celledoni     | Celledoni     | <i>Rattus fuscipes</i>            | Bush rat                  | Rodentia     | Mamalia | Australia  | (14)              |
| Cynopteri     | Tingomaria    | <i>Didelphis marsupialis</i>      | Common opossum            | Didelphi     | Mamalia | Peru   | (145)             |
| Cynopteri     | Tingomaria    | <i>Philander opossum</i>          | Gray four-eyed opossum    | Didelphi     | Mamalia | Peru   | (145)             |
| Djasiman      | Buenos Aires  | <i>Canis lupus</i>                | Dog                       | Carnivora    | Mamalia | Argentina  | (184)             |
| Djasiman      | Djasiman      | <i>Rattus bowersi</i>             | Bower's white toothed rat | Rodentia     | Mamalia | Malaysia   | (27)              |
| Djasiman      | Djasiman      | <i>Spermophilus citellus</i>      | European ground squirrel  | Rodentia     | Mamalia | Türkiye  | (185)             |
| Djasiman      | Huallaga      | <i>Didelphis marsupialis</i>      | Common opossum            | Didelphi     | Mamalia | Peru   | (145)             |
| Djasiman      | Sentot        | <i>Paradoxurus hermaphroditus</i> | Asian palm civet          | Carnivora    | Mamalia | Malaysia   | (27)              |
| Grippotyphosa | Canalzonae    | <i>Liomys adspersus</i>           | Spiny pocket mouse        | Rodentia     | Mamalia | Panama   | (137)             |
| Grippotyphosa | Canalzonae    | <i>Philander opossum</i>          | Gray four-eyed opossum    | Didelphi     | Mamalia | Panama   | (137)             |
| Grippotyphosa | Canalzonae    | <i>Proechimys semispinosus</i>    | Spiny rat                 | Rodentia     | Mamalia | Panama   | (137)             |
| Grippotyphosa | Dadas         | <i>Apodemus flavicollis</i>       | Yellow-necked field mouse | Rodentia     | Mamalia | Croatia  | (34)              |
| Grippotyphosa | Dadas         | <i>Bos taurus</i>                 | Cattle                    | Artiodactyla | Mamalia | Türkiye  | (186)             |
| Grippotyphosa | Dadas         | <i>Canis lupus</i>                | Dog                       | Carnivora    | Mamalia | Thailand   | (142)             |
| Grippotyphosa | Grippotyphosa | <i>Akodon arviculoides</i>        | Montane grass mouse       | Rodentia     | Mamalia | Brazil   | (90)              |
| Grippotyphosa | Grippotyphosa | <i>Apodemus flavicollis</i>       | Yellow-necked field mouse | Rodentia     | Mamalia | Croatia, Slovakia  | (34, 187)         |
| Grippotyphosa | Grippotyphosa | <i>Bos taurus</i>                 | Cattle                    | Artiodactyla | Mamalia | Australia, Iran (Islamic Republic of), Nigeria, Tunisia, United Republic of Tanzania, United States of America | (35, 59, 188-193) |
| Grippotyphosa | Grippotyphosa | <i>Canis lupus</i>                | Dog                       | Carnivora    | Mamalia | United States of America   | (93)              |

|               |               |                                |                             |                 |           |   |                 |
|---------------|---------------|--------------------------------|-----------------------------|-----------------|-----------|---|-----------------|
| Grippotyphosa | Grippotyphosa | <i>Capra aegagrus</i>          | Goat                        | Artiodactyla    | Mammalia  | Israel  | (194)           |
| Grippotyphosa | Grippotyphosa | <i>Clethrionomys glareolus</i> | Bank vole                   | Rodentia        | Mammalia  | Slovakia  | (187)           |
| Grippotyphosa | Grippotyphosa | <i>Dermacentor marginatus</i>  | Tick (obtained from cattle) | Ixodidae        | Arachnida | Kazakhstan  | (195)           |
| Grippotyphosa | Grippotyphosa | <i>Didelphis marsupialis</i>   | Common opossum              | Didelphimorphia | Mammalia  | Brazil<br>Austria, Germany, Italy, Luxembourg, Netherlands, Portugal, Switzerland, United Kingdom of Great Britain and Northern Ireland | (90)            |
| Grippotyphosa | Grippotyphosa | <i>Equus caballus</i>          | Horse                       | Perissodactyla  | Mammalia  | Britain and Northern Ireland  | (36, 196)       |
| Grippotyphosa | Grippotyphosa | <i>Glaucomys volans</i>        | Flying squirrel             | Rodentia        | Mammalia  | Japan   | (197)           |
| Grippotyphosa | Grippotyphosa | <i>Hemiechinus auritus</i>     | Long eared hedgehog         | Eulipotyphala   | Mammalia  | Israel  | (99)            |
| Grippotyphosa | Grippotyphosa | <i>Isodon macrourus</i>        | Northern brown bandicoot    | Peramelemorphia | Mammalia  | Australia   | (28)            |
| Grippotyphosa | Grippotyphosa | <i>Mephitis mephitis</i>       | Striped skunk               | Carnivora       | Mammalia  | United States of America  | (103)           |
| Grippotyphosa | Grippotyphosa | <i>Microtus agrestis</i>       | Field vole                  | Rodentia        | Mammalia  | Russian Federation  | (198)           |
| Grippotyphosa | Grippotyphosa | <i>Microtus arvalis</i>        | Common vole                 | Rodentia        | Mammalia  | Netherlands, Poland, Slovakia   | (187, 199, 200) |
| Grippotyphosa | Grippotyphosa | <i>Microtus oeconomus</i>      | Tundra vole                 | Rodentia        | Mammalia  | Russian Federation  | (201)           |
| Grippotyphosa | Grippotyphosa | <i>Microtus pennsylvanicus</i> | Meadow vole                 | Rodentia        | Mammalia  | United States of America  | (202)           |
| Grippotyphosa | Grippotyphosa | <i>Microtus subterraneus</i>   | Pine vole                   | Rodentia        | Mammalia  | Slovakia  | (187)           |
| Grippotyphosa | Grippotyphosa | <i>Mus musculus</i>            | House mouse                 | Rodentia        | Mammalia  | Egypt, Iran (Islamic Republic of)   | (203, 204)      |
| Grippotyphosa | Grippotyphosa | <i>Nectomys squamipes</i>      | South American water rat    | Rodentia        | Mammalia  | Brazil  | (90, 177)       |
| Grippotyphosa | Grippotyphosa | <i>Oligoryzomys eliurus</i>    | Brazilian pygmy rice rat    | Rodentia        | Mammalia  | Brazil  | (90)            |
| Grippotyphosa | Grippotyphosa | <i>Ondatra spp.</i>            | Muskrat                     | Rodentia        | Mammalia  | France  | (205)           |
| Grippotyphosa | Grippotyphosa | <i>Ondatra zibethicus</i>      | Muskrat                     | Rodentia        | Mammalia  | Netherlands   | (60)            |
| Grippotyphosa | Grippotyphosa | <i>Ovis aries</i>              | Sheep                       | Artiodactyla    | Mammalia  | Iran (Islamic Republic of), Spain   | (190, 206, 207) |

|               |               |                                  |                        |                 |          |                          |              |
|---------------|---------------|----------------------------------|------------------------|-----------------|----------|--------------------------|--------------|
| Grippotyphosa | Grippotyphosa | <i>Oxymycterus quaestor</i>      | Quaestor hociudo       | Rodentia        | Mammalia | Brazil                   | (90)         |
| Grippotyphosa | Grippotyphosa | <i>Philander opossum</i>         | Gray four-eyed opossum | Didelphimorphia | Mammalia | Brazil                   | (16)         |
| Grippotyphosa | Grippotyphosa | <i>Procyon lotor</i>             | Raccoon                | Carnivora       | Mammalia | United States of America | (18, 96, 97) |
| Grippotyphosa | Grippotyphosa | <i>Rattus rattus</i>             | Black rat              | Rodentia        | Mammalia | Egypt, Israel            | (114, 178)   |
| Grippotyphosa | Grippotyphosa | <i>Rattus sordidus</i>           | Canefield rat          | Rodentia        | Mammalia | Australia                | (28)         |
| Grippotyphosa | Grippotyphosa | <i>Reithrodontomys megalotis</i> | Western harvest mouse  | Rodentia        | Mammalia | United States of America | (96)         |
| Grippotyphosa | Grippotyphosa | <i>Sooretamys angouya</i>        | Paraguayan rice rat    | Rodentia        | Mammalia | Brazil                   | (90)         |
| Grippotyphosa | Grippotyphosa | <i>Sorex spp.</i>                | Vagrant shrew          | Eulipotyphala   | Mammalia | United States of America | (208)        |
| Grippotyphosa | Grippotyphosa | <i>Sundamys muelleri</i>         | Mueller's rat          | Rodentia        | Mammalia | Malaysia                 | (27, 71)     |
| Grippotyphosa | Grippotyphosa | <i>Sus scrofa</i>                | Pig                    | Artiodactyla    | Mammalia | United States of America | (209)        |
| Grippotyphosa | Grippotyphosa | <i>Sylvilagus aquaticus</i>      | Swamp rabbit           | Lagomorpha      | Mammalia | United States of America | (210)        |
| Grippotyphosa | Grippotyphosa | <i>Sylvilagus floridanus</i>     | Cottontail rabbit      | Lagomorpha      | Mammalia | United States of America | (210)        |
| Grippotyphosa | Grippotyphosa | <i>Tatera robusta</i>            | Fringe-tailed gerbil   | Rodentia        | Mammalia | Kenya                    | (211)        |
| Grippotyphosa | Grippotyphosa | <i>Thaptomys nigrita</i>         | Blackish grass mouse   | Rodentia        | Mammalia | Brazil                   | (90)         |
| Grippotyphosa | Grippotyphosa | <i>Urocyon cinereoargenteus</i>  | Grey fox               | Carnivora       | Mammalia | United States of America | (17)         |
| Grippotyphosa | Grippotyphosa | Not stated                       | Fruit bat              | Chiroptera      | Mammalia | Peru                     | (212)        |
| Grippotyphosa | Grippotyphosa | Not stated                       | Opossum                | Didelphimorphia | Mammalia | United States of America | (208)        |
| Grippotyphosa | Grippotyphosa | Not stated                       | Rodent                 | Rodentia        | Mammalia | Poland                   | (29)         |
| Grippotyphosa | Grippotyphosa | Not stated                       | Rotel mice             | Rodentia        | Mammalia | Slovakia                 | (213)        |
| Grippotyphosa | Muelleri      | <i>Sundamys muelleri</i>         | Mueller's rat          | Rodentia        | Mammalia | Malaysia                 | (71)         |

|               |               |                             |                           |                 |          |                                     |            |
|---------------|---------------|-----------------------------|---------------------------|-----------------|----------|-------------------------------------|------------|
| Grippotyphosa | Ratnapura     | <i>Bos taurus</i>           | Cattle                    | Artiodactyla    | Mammalia | Zimbabwe                            | (214)      |
| Grippotyphosa | Ratnapura     | <i>Rattus rattus</i>        | Black rat                 | Rodentia        | Mammalia | India                               | (215)      |
| Grippotyphosa | Valbuzzi      | <i>Rattus rattus</i>        | Black rat                 | Rodentia        | Mammalia | India                               | (215)      |
| Grippotyphosa | Vanderhoedeni | <i>Hemiechinus auritus</i>  | Long eared hedgehog       | Eulipotyphla    | Mammalia | Israel                              | (216)      |
| Hebdomadis    | Borincana     | <i>Ondatra spp.</i>         | Muskrat                   | Rodentia        | Mammalia | France                              | (205)      |
| Hebdomadis    | Borincana     | <i>Philander spp.</i>       | Opossum                   | Didelphimorphia | Mammalia | Peru                                | (217)      |
| Hebdomadis    | Borincana     | <i>Rat spp.</i>             | Rat                       | Rodentia        | Mammalia | Peru                                | (217)      |
| Hebdomadis    | Goiano        | <i>Bos taurus</i>           | Cattle                    | Artiodactyla    | Mammalia | Brazil                              | (218)      |
| Hebdomadis    | Goiano        | <i>Sus scrofa</i>           | Pig                       | Artiodactyla    | Mammalia | Peru                                | (219)      |
| Hebdomadis    | Hebdomadis    | <i>Apodemus flavicollis</i> | Yellow-necked field mouse | Rodentia        | Mammalia | Romania                             | (220)      |
| Hebdomadis    | Hebdomadis    | <i>Apodemus sylvaticus</i>  | Common field mouse        | Rodentia        | Mammalia | Iran (Islamic Republic of), Romania | (221, 222) |
| Hebdomadis    | Hebdomadis    | <i>Bos taurus</i>           | Cattle                    | Artiodactyla    | Mammalia | Japan                               | (6)        |
| Hebdomadis    | Hebdomadis    | <i>Microtus fortis</i>      | Reed vole                 | Rodentia        | Mammalia | China                               | (1)        |
| Hebdomadis    | Hebdomadis    | <i>Mus musculus</i>         | House mouse               | Rodentia        | Mammalia | Romania                             | (222)      |
| Hebdomadis    | Hebdomadis    | <i>Mus spicilegus</i>       | Steppe mouse              | Rodentia        | Mammalia | Romania                             | (220, 222) |
| Hebdomadis    | Hebdomadis    | <i>Procyon lotor</i>        | Raccoon                   | Carnivora       | Mammalia | Japan                               | (223)      |
| Hebdomadis    | Hebdomadis    | <i>Rattus norvegicus</i>    | Norwegian rat             | Rodentia        | Mammalia | China                               | (1)        |
| Hebdomadis    | Hebdomadis    | <i>Rattus spp.</i>          | Rat                       | Rodentia        | Mammalia | China                               | (26)       |
| Hebdomadis    | Iassy         | <i>Mus musculus</i>         | House mouse               | Rodentia        | Mammalia | Romania                             | (224)      |
| Hebdomadis    | Jules         | <i>Sus scrofa</i>           | Pig                       | Artiodactyla    | Mammalia | Peru                                | (138)      |

|                                 |             |                                |                          |                 |          |   |  |
|---------------------------------|-------------|--------------------------------|--------------------------|-----------------|----------|---|--|
| Hebdomadis                      | Kremastos   | <i>Bos taurus</i>              | Cattle                   | Artiodactyla    | Mammalia | Japan, Peru   | (135, 225)   |
| Hebdomadis                      | Kremastos   | <i>Isodon macrourus</i>        | Northern brown bandicoot | Peramelemorphia | Mammalia | Australia   | (14)   |
| Hebdomadis                      | Kremastos   | <i>Perameles nasuta</i>        | Long-nosed bandicoot     | Peramelemorphia | Mammalia | Australia   | (14)   |
| Hebdomadis                      | Marondera   | <i>Bos taurus</i>              | Cattle                   | Artiodactyla    | Mammalia | Zimbabwe  | (50, 226)  |
| Hebdomadis                      | Maru        | <i>Herpestes urva</i>          | Crab-eating mongoose     | Carnivora       | Mammalia | China   | (227)  |
| Hebdomadis                      | Maru        | <i>Proechimys semispinosus</i> | Spiny rat                | Rodentia        | Mammalia | Panama  | (137)  |
| Hebdomadis                      | Mhou        | <i>Bos taurus</i>              | Cattle                   | Artiodactyla    | Mammalia | Zimbabwe  | (50, 226)  |
| Hurstbridge Icterohaemorrhagiae | Hurstbridge | <i>Sus scrofa</i>              | Pig                      | Artiodactyla    | Mammalia | Australia   | (228)  |
| Icterohaemorrhagiae             | Bogvere     | <i>Rattus rattus</i>           | Black rat                | Rodentia        | Mammalia | Guadeloupe  | (229)  |
| Icterohaemorrhagiae             | Copenhageni | <i>Bos taurus</i>              | Cattle                   | Artiodactyla    | Mammalia | Brazil, New Zealand   | (92, 150, 172, 230, 231)                               |
| Icterohaemorrhagiae             | Copenhageni | <i>Canis lupus</i>             | Dog                      | Carnivora       | Mammalia | Barbados, Brazil, Italy, Trinidad and Tobago  | (8, 72, 76, 78, 153, 168, 172, 230-234)                |
| Icterohaemorrhagiae             | Copenhageni | <i>Cebus capucinus</i>         | Capuchin monkey          | Primates        | Mammalia | Colombia  | (235)  |
| Icterohaemorrhagiae             | Copenhageni | <i>Herpestes auropunctatus</i> | Lesser Indian mongoose   | Carnivora       | Mammalia | Grenada   | (66)   |
| Icterohaemorrhagiae             | Copenhageni | <i>Mus musculus</i>            | House mouse              | Rodentia        | Mammalia | Barbados  | (81)   |
| Icterohaemorrhagiae             | Copenhageni | <i>Myocastor coypus</i>        | Nutria                   | Rodentia        | Mammalia | Netherlands   | (236)  |
| Icterohaemorrhagiae             | Copenhageni | <i>Ondatra spp.</i>            | Muskrat                  | Rodentia        | Mammalia | France  | (205)  |
| Icterohaemorrhagiae             | Copenhageni | <i>Ondatra zibethicus</i>      | Muskrat                  | Rodentia        | Mammalia | Netherlands   | (60)   |
| Icterohaemorrhagiae             | Copenhageni | <i>Proechimys guyannensis</i>  | Guyenne spiny rat        | Rodentia        | Mammalia | Trinidad and Tobago   | (66, 72)   |
| Icterohaemorrhagiae             | Copenhageni | <i>Rat spp.</i>                | Rat                      | Rodentia        | Mammalia | Brazil  | (172)  |
| Icterohaemorrhagiae             | Copenhageni | <i>Rattus norvegicus</i>       | Norwegian rat            | Rodentia        | Mammalia | Barbados, Brazil, Colombia, Germany, Grenada, Japan, New Zealand, Peru, Russian Federation, Trinidad and Tobago, United States of America | (66, 72, 76, 79, 81, 113, 219, 230, 231, 235, 237-244) |

|                     |                     |                                |                        |                 |          |  |                                     |
|---------------------|---------------------|--------------------------------|------------------------|-----------------|----------|--|-------------------------------------|
| Icterohaemorrhagiae | Copenhageni         | <i>Rattus rattus</i>           | Black rat              | Rodentia        | Mammalia | Barbados, Brazil, French Guiana, Grenada, Trinidad and Tobago  | (66, 72, 76, 79, 81, 230, 231, 245) |
| Icterohaemorrhagiae | Copenhageni         | <i>Rattus spp.</i>             | Rat                    | Rodentia        | Mammalia | Romania, Trinidad and Tobago   | (233, 246)                          |
| Icterohaemorrhagiae | Copenhageni         | <i>Saimiri sciureus</i>        | Squirrel monkey        | Primates        | Mammalia | French Guiana  | (245)                               |
| Icterohaemorrhagiae | Hongchon            | <i>Apodemus agrarius</i>       | Striped field mouse    | Rodentia        | Mammalia | Republic of Korea  | (247)                               |
| Icterohaemorrhagiae | Icterohaemorrhagiae | <i>Apodemus agrarius</i>       | Striped field mouse    | Rodentia        | Mammalia | China  | (1)                                 |
| Icterohaemorrhagiae | Icterohaemorrhagiae | <i>Bos taurus</i>              | Cattle                 | Artiodactyla    | Mammalia | Brazil, India, Nigeria, United Kingdom of Great Britain and Northern Ireland, United States of America | (35, 248-251)                       |
| Icterohaemorrhagiae | Icterohaemorrhagiae | <i>Calomys lauchas</i>         | Small vesper mouse     | Rodentia        | Mammalia | Argentina  | (146)                               |
| Icterohaemorrhagiae | Icterohaemorrhagiae | <i>Canis lupus</i>             | Dog                    | Carnivora       | Mammalia | Italy, Netherlands, Puerto Rico, United States of America  | (8, 115, 158, 167, 170, 252)        |
| Icterohaemorrhagiae | Icterohaemorrhagiae | <i>Capra aegagrus</i>          | Goat                   | Artiodactyla    | Mammalia | Spain  | (207)                               |
| Icterohaemorrhagiae | Icterohaemorrhagiae | <i>Cricetinae spp.</i>         | Hamster                | Rodentia        | Mammalia | United States of America   | (252)                               |
| Icterohaemorrhagiae | Icterohaemorrhagiae | <i>Cricetomys spp.</i>         | Giant pouched rat      | Rodentia        | Mammalia | United Republic of Tanzania  | (59)                                |
| Icterohaemorrhagiae | Icterohaemorrhagiae | <i>Didelphis marsupialis</i>   | Common opossum         | Didelphimorphia | Mammalia | Brazil   | (90)                                |
| Icterohaemorrhagiae | Icterohaemorrhagiae | <i>Erinaceus europaeus</i>     | Hedgehog               | Eulipotyphla    | Mammalia | Italy, Portugal  | (11, 87)                            |
| Icterohaemorrhagiae | Icterohaemorrhagiae | <i>Herpestes auropunctatus</i> | Lesser Indian mongoose | Carnivora       | Mammalia | Guadeloupe, Puerto Rico, United States of America  | (13, 24, 106, 115)                  |
| Icterohaemorrhagiae | Icterohaemorrhagiae | <i>Herpestes ichneumon</i>     | Egyptian mongoose      | Carnivora       | Mammalia | Egypt  | (204)                               |
| Icterohaemorrhagiae | Icterohaemorrhagiae | <i>Mephitis mephitis</i>       | Skunk                  | Carnivora       | Mammalia | United States of America   | (253)                               |
| Icterohaemorrhagiae | Icterohaemorrhagiae | <i>Mephitis mephitis</i>       | Striped skunk          | Carnivora       | Mammalia | United States of America   | (102, 103)                          |
| Icterohaemorrhagiae | Icterohaemorrhagiae | <i>Microtus montebelli</i>     | Japanese field vole    | Rodentia        | Mammalia | Japan  | (69)                                |
| Icterohaemorrhagiae | Icterohaemorrhagiae | <i>Mus musculus</i>            | House mouse            | Rodentia        | Mammalia | Puerto Rico, United States of America  | (24, 106, 115, 253)                 |
| Icterohaemorrhagiae | Icterohaemorrhagiae | <i>Myocastor coypus</i>        | Nutria                 | Rodentia        | Mammalia | France   | (254)                               |

|                     |                     |                                 |                     |                 |          |  |  |
|---------------------|---------------------|---------------------------------|---------------------|-----------------|----------|--|--|
| Icterohaemorrhagiae | Icterohaemorrhagiae | <i>Ondatra spp.</i>             | Muskrat             | Rodentia        | Mammalia | France   | (205)  |
| Icterohaemorrhagiae | Icterohaemorrhagiae | <i>Ovis aries</i>               | Sheep               | Artiodactyla    | Mammalia | Spain  | (207)  |
| Icterohaemorrhagiae | Icterohaemorrhagiae | <i>Paguma larvata</i>           | Masked palm civet   | Carnivora       | Mammalia | China  | (80)   |
| Icterohaemorrhagiae | Icterohaemorrhagiae | <i>Procyon lotor</i>            | Raccoon             | Carnivora       | Mammalia | United States of America   | (253)  |
| Icterohaemorrhagiae | Icterohaemorrhagiae | <i>Proechimys spp.</i>          | Spiny rat           | Rodentia        | Mammalia | Peru   | (255)  |
| Icterohaemorrhagiae | Icterohaemorrhagiae | <i>Rattus exulans</i>           | Polynesian rat      | Rodentia        | Mammalia | United States of America<br>Algeria, Canada, Colombia, French Guiana, Israel, Japan, Malaysia, Philippines, Portugal, Puerto Rico, South Africa, Spain, Trinidad and Tobago, Tunisia, United Kingdom of Great Britain and Northern Ireland, United States of America | (24, 106)  |
| Icterohaemorrhagiae | Icterohaemorrhagiae | <i>Rattus norvegicus</i>        | Norwegian rat       | Rodentia        | Mammalia | China, Colombia, Portugal, Puerto Rico, Trinidad and Tobago, Tunisia, United States of America   | (24, 27, 72, 84, 87, 88, 106, 114, 115, 140, 237, 256-268) |
| Icterohaemorrhagiae | Icterohaemorrhagiae | <i>Rattus rattus</i>            | Black rat           | Rodentia        | Mammalia | Peru, Puerto Rico, Romania, Trinidad and Tobago, United States of America  | (24, 72, 80, 84, 87, 106, 115, 260, 269, 270)              |
| Icterohaemorrhagiae | Icterohaemorrhagiae | <i>Rattus spp.</i>              | Rat                 | Rodentia        | Mammalia | United States of America   | (115, 165, 233, 246, 271, 272)                             |
| Icterohaemorrhagiae | Icterohaemorrhagiae | <i>Rattus tanezumi</i>          | Oriental house rat  | Rodentia        | Mammalia | Philippines  | (140)  |
| Icterohaemorrhagiae | Icterohaemorrhagiae | <i>Sundamys muelleri</i>        | Mueller's rat       | Rodentia        | Mammalia | Malaysia   | (27)   |
| Icterohaemorrhagiae | Icterohaemorrhagiae | <i>Sus scrofa</i>               | Pig                 | Artiodactyla    | Mammalia | Brazil, India, United Kingdom of Great Britain and Northern Ireland, United States of America  | (248, 273-275)   |
| Icterohaemorrhagiae | Icterohaemorrhagiae | <i>Urocyon cinereoargenteus</i> | Gray fox            | Carnivora       | Mammalia | United States of America   | (253)  |
| Icterohaemorrhagiae | Icterohaemorrhagiae | <i>Vulpes vulpes</i>            | Red fox             | Carnivora       | Mammalia | Egypt  | (204)  |
| Icterohaemorrhagiae | Icterohaemorrhagiae | Not stated                      | Fruit bat           | Chiroptera      | Mammalia | Peru   | (212)  |
| Icterohaemorrhagiae | Icterohaemorrhagiae | Not stated                      | Opossum             | Didelphimorphia | Mammalia | United States of America   | (120)  |
| Icterohaemorrhagiae | Icterohaemorrhagiae | Not stated                      | Rodent              | Rodentia        | Mammalia | Poland   | (29)   |
| Icterohaemorrhagiae | Lai                 | <i>Apodemus agrarius</i>        | Striped field mouse | Rodentia        | Mammalia | Republic of Korea  | (276, 277)   |



|                     |           |                             |                       |              |          |                             |            |
|---------------------|-----------|-----------------------------|-----------------------|--------------|----------|-----------------------------|------------|
| Icterohaemorrhagiae | Lai       | <i>Rat spp.</i>             | Rat                   | Rodentia     | Mammalia | Republic of Korea           | (278)      |
| Icterohaemorrhagiae | Lai       | <i>Rattus tanezumi</i>      | Oriental house rat    | Rodentia     | Mammalia | China                       | (279)      |
| Icterohaemorrhagiae | Mankarso  | <i>Maxomys whiteheadi</i>   | Whitehead's spiny rat | Rodentia     | Mammalia | Indonesia                   | (71)       |
| Icterohaemorrhagiae | Mankarso  | <i>Rattus spp.</i>          | Rat                   | Rodentia     | Mammalia | Trinidad and Tobago         | (233)      |
| Icterohaemorrhagiae | Sokoine   | <i>Bos taurus</i>           | Cattle                | Artiodactyla | Mammalia | United Republic of Tanzania | (59, 280)  |
| Icterohaemorrhagiae | Sokoine   | <i>Cricetomys spp.</i>      | Giant pouched rat     | Rodentia     | Mammalia | United Republic of Tanzania | (59)       |
| Icterohaemorrhagiae | Yeonchon  | <i>Rat spp.</i>             | Rat                   | Rodentia     | Mammalia | Republic of Korea           | (278)      |
| Icterohaemorrhagiae | Zimbabwe  | <i>Bos taurus</i>           | Cattle                | Artiodactyla | Mammalia | Zimbabwe                    | (50, 281)  |
| Iquitos             | Varillal  | <i>Rattus norvegicus</i>    | Norwegian rat         | Rodentia     | Mammalia | Peru                        | (272)      |
| Iquitos             | Varillal  | <i>Rattus rattus</i>        | Black rat             | Rodentia     | Mammalia | Peru                        | (272)      |
| Javanica            | Ceylonica | <i>Suncus caeruleus</i>     | Musk shrew            | Eulipotyphla | Mammalia | Sri Lanka                   | (282)      |
| Javanica            | Izatnagar | <i>Rattus rattus</i>        | Black rat             | Rodentia     | Mammalia | India                       | (283, 284) |
| Javanica            | Javanica  | <i>Bos taurus</i>           | Cattle                | Artiodactyla | Mammalia | Malaysia                    | (3-5)      |
| Javanica            | Javanica  | <i>Canis lupus</i>          | Dog                   | Carnivora    | Mammalia | Sri Lanka                   | (180)      |
| Javanica            | Javanica  | <i>Felis catus</i>          | Cat                   | Carnivora    | Mammalia | Indonesia                   | (127)      |
| Javanica            | Javanica  | <i>Mus musculus</i>         | House mouse           | Rodentia     | Mammalia | India                       | (285, 286) |
| Javanica            | Javanica  | <i>Myocastor coypus</i>     | Nutria                | Rodentia     | Mammalia | China                       | (15)       |
| Javanica            | Javanica  | <i>Ovis aries</i>           | Sheep                 | Artiodactyla | Mammalia | India                       | (285, 287) |
| Javanica            | Javanica  | <i>Rat spp.</i>             | Rat                   | Rodentia     | Mammalia | Sri Lanka, Thailand         | (22, 180)  |
| Javanica            | Javanica  | <i>Rattus argentiventer</i> | Rice-field rat        | Rodentia     | Mammalia | Malaysia                    | (27)       |

|           |            |                                |                      |                     |              |                                  |                                    |
|-----------|------------|--------------------------------|----------------------|---------------------|--------------|----------------------------------|------------------------------------|
| Javanica  | Javanica   | <i>Rattus exulans</i>          | Polynesian rat       | Rodentia            | Mam<br>malia | Malaysia                         | (129, 130)                         |
| Javanica  | Javanica   | <i>Rattus norvegicus</i>       | Norwegian rat        | Rodentia            | Mam<br>malia | India, Malaysia, Philippines     | (27, 130, 132, 140, 285, 286, 288) |
| Javanica  | Javanica   | <i>Rattus rattus</i>           | Black rat            | Rodentia            | Mam<br>malia | India, Japan, Malaysia, Thailand | (74, 75, 129, 130, 132, 289-291)   |
| Javanica  | Javanica   | <i>Rattus rattus</i>           | Malayan black rat    | Rodentia            | Mam<br>malia | Malaysia                         | (27)                               |
| Javanica  | Javanica   | <i>Rattus spp.</i>             | Rat                  | Rodentia            | Mam<br>malia | China, Philippines, Thailand     | (15, 26, 133, 134)                 |
| Javanica  | Javanica   | <i>Rattus tanezumi</i>         | Oriental house rat   | Rodentia            | Mam<br>malia | Philippines                      | (140)                              |
| Javanica  | Menoni     | <i>Bandicota bengalensis</i>   | Lesser bandicoot rat | Rodentia            | Mam<br>malia | India                            | (292)                              |
| Javanica  | Sorexjalna | <i>Erinaceus europaeus</i>     | Hedgehog             | Eulipotyp<br>hla    | Mam<br>malia | Netherlands                      | (41)                               |
| Javanica  | Sorexjalna | Not stated                     | Rodent               | Rodentia            | Mam<br>malia | Poland                           | (29)                               |
| Javanica  | Zhenkang   | <i>Rattus flavipectus</i>      | Yellow breasted rat  | Rodentia            | Mam<br>malia | China                            | (293)                              |
| Louisiana | Lanka      | <i>Marmosa fuscata</i>         | Mouse opossum        | Didelphi<br>morphia | Mam<br>malia | Trinidad and Tobago              | (66, 72)                           |
| Louisiana | Lanka      | <i>Marmosa mitis</i>           | Pouchless opossum    | Didelphi<br>morphia | Mam<br>malia | Trinidad and Tobago              | (66, 72)                           |
| Louisiana | Lanka      | <i>Rattus rattus</i>           | Black rat            | Rodentia            | Mam<br>malia | Trinidad and Tobago              | (72)                               |
| Louisiana | Louisiana  | <i>Dasyopus novemcinctus</i>   | Long nosed armadillo | Cingulata           | Mam<br>malia | United States of America         | (294)                              |
| Louisiana | Orleans    | <i>Myocastor coypus</i>        | Nutria               | Rodentia            | Mam<br>malia | United States of America         | (294)                              |
| Mini      | Beye       | <i>Canis lupus</i>             | Dog                  | Carnivora           | Mam<br>malia | Colombia                         | (235)                              |
| Mini      | Beye       | <i>Proechimys semispinosus</i> | Spiny rat            | Rodentia            | Mam<br>malia | Panama                           | (65)                               |
| Mini      | Georgia    | <i>Bos taurus</i>              | Cattle               | Artiodact<br>yla    | Mam<br>malia | Peru                             | (135)                              |
| Mini      | Georgia    | <i>Canis lupus</i>             | Dog                  | Carnivora           | Mam<br>malia | Trinidad and Tobago              | (72, 168)                          |
| Mini      | Georgia    | <i>Didelphis marsupialis</i>   | Common opossum       | Didelphi<br>morphia | Mam<br>malia | United States of America         | (295)                              |

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|--------|------------|--------------------------------|--------------------------|-----------------|---------|--|--------------------|
| Mini   | Georgia    | <i>Mephitis mephitis</i>       | Striped skunk            | Carnivora       | Mamalia | United States of America                                     | (103, 295)         |
| Mini   | Georgia    | <i>Procyon lotor</i>           | Raccoon                  | Carnivora       | Mamalia | United States of America                                     | (295)              |
| Mini   | Mini       | <i>Arvicola terrestris</i>     | European water vole      | Rodentia        | Mamalia | Bulgaria   | (126)              |
| Mini   | Mini       | <i>Isoodon macrourus</i>       | Northern brown bandicoot | Peramelemorphia | Mamalia | Australia  | (14)               |
| Mini   | Ruparupae  | <i>Didelphis marsupialis</i>   | Common opossum           | Didelphimorphia | Mamalia | Peru   | (145)              |
| Mini   | Ruparupae  | <i>Philander opossum</i>       | Gray four-eyed opossum   | Didelphimorphia | Mamalia | Peru   | (145)              |
| Mini   | Szwajizak  | <i>Bos taurus</i>              | Cattle                   | Artiodactyla    | Mamalia | United States of America                                     | (296)              |
| Mini   | Szwajizak  | <i>Didelphis marsupialis</i>   | Common opossum           | Didelphimorphia | Mamalia | Brazil   | (90)               |
| Mini   | Szwajizak  | <i>Erinaceus europaeus</i>     | Hedgehog                 | Eulipotyphla    | Mamalia | Israel   | (12, 99, 114)      |
| Mini   | Szwajizak  | <i>Mus musculus</i>            | House mouse              | Rodentia        | Mamalia | Israel   | (12, 114)          |
| Mini   | Szwajizak  | <i>Rattus rattus</i>           | Black rat                | Rodentia        | Mamalia | Israel   | (12, 88, 114)      |
| Panama | Cristobali | <i>Didelphis spp.</i>          | Didelphis opossum        | Didelphimorphia | Mamalia | Panama   | (65)               |
| Panama | Mangus     | <i>Didelphis albiventris</i>   | White eared opossum      | Didelphimorphia | Mamalia | Brazil   | (16)               |
| Panama | Mangus     | <i>Herpestes auropunctatus</i> | Lesser Indian mongoose   | Carnivora       | Mamalia | Trinidad and Tobago  | (72, 297)          |
| Panama | Panama     | <i>Didelphis marsupialis</i>   | Common opossum           | Didelphimorphia | Mamalia | Panama   | (137)              |
| Pomona | Altodouro  | <i>Mus musculus</i>            | House mouse              | Rodentia        | Mamalia | Portugal   | (298)              |
| Pomona | Kunming    | <i>Apodemus chevrieri</i>      | Chevrier's field mouse   | Rodentia        | Mamalia | China  | (299)              |
| Pomona | Monjakov   | <i>Rattus norvegicus</i>       | Norwegian rat            | Rodentia        | Mamalia | Russian Federation   | (300)              |
| Pomona | Monjakov   | <i>Sus scrofa</i>              | Pig                      | Artiodactyla    | Mamalia | Republic of Moldova, Russian Federation, Sri Lanka, Viet Nam | (180, 300)         |
| Pomona | Mozdok     | <i>Apodemus agrarius</i>       | Striped field mouse      | Rodentia        | Mamalia | Croatia, Germany, Russian Federation                         | (34, 51, 300, 301) |

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|---------------|---------------|---------------------------------|-----------------------------|--------------|----------|---|--|
| <b>Pomona</b> | <b>Mozdok</b> | <i>Apodemus flavicollis</i>     | Yellow-necked field mouse   | Rodentia     | Mammalia | Croatia   | (34)   |
| <b>Pomona</b> | <b>Mozdok</b> | <i>Apodemus sylvaticus</i>      | Common field mouse          | Rodentia     | Mammalia | Croatia, Russian Federation   | (34, 300)                                    |
| <b>Pomona</b> | <b>Mozdok</b> | <i>Bos taurus</i>               | Cattle                      | Artiodactyla | Mammalia | Germany, Russian Federation, United Kingdom of Great Britain and Northern Ireland, Zimbabwe                       | (50, 300, 302, 303)                          |
| <b>Pomona</b> | <b>Mozdok</b> | <i>Canis lupus</i>              | Dog                         | Carnivora    | Mammalia | Italy   | (8)  |
| <b>Pomona</b> | <b>Mozdok</b> | <i>Crocidura russula</i>        | Greater white toothed shrew | Eulipotyphla | Mammalia | Portugal  | (87)   |
| <b>Pomona</b> | <b>Mozdok</b> | <i>Herpestes urva</i>           | Crab-eating mongoose        | Carnivora    | Mammalia | China   | (227)  |
| <b>Pomona</b> | <b>Mozdok</b> | <i>Microtus agrestis</i>        | Field vole                  | Rodentia     | Mammalia | United Kingdom of Great Britain and Northern Ireland  | (303)  |
| <b>Pomona</b> | <b>Mozdok</b> | <i>Microtus majori</i>          | Major's pine vole           | Rodentia     | Mammalia | Russian Federation  | (300)  |
| <b>Pomona</b> | <b>Mozdok</b> | <i>Mus musculus</i>             | House mouse                 | Rodentia     | Mammalia | Germany   | (301)  |
| <b>Pomona</b> | <b>Mozdok</b> | <i>Mus spretus</i>              | Algerian mouse              | Rodentia     | Mammalia | Portugal  | (87)   |
| <b>Pomona</b> | <b>Mozdok</b> | <i>Muscardinus avellanarius</i> | Hazel dormouse              | Rodentia     | Mammalia | Croatia   | (51)   |
| <b>Pomona</b> | <b>Mozdok</b> | <i>Sus scrofa</i>               | Pig                         | Artiodactyla | Mammalia | Italy, United Kingdom of Great Britain and Northern Ireland   | (304, 305)                                   |
| <b>Pomona</b> | <b>Pomona</b> | <i>Akodon arviculoides</i>      | Montane grass mouse         | Rodentia     | Mammalia | Brazil  | (16)   |
| <b>Pomona</b> | <b>Pomona</b> | <i>Apodemus agrarius</i>        | Striped field mouse         | Rodentia     | Mammalia | Russian Federation  | (306)  |
| <b>Pomona</b> | <b>Pomona</b> | <i>Arvicola terrestris</i>      | European water vole         | Rodentia     | Mammalia | Bulgaria  | (126)  |
| <b>Pomona</b> | <b>Pomona</b> | <i>Bos taurus</i>               | Cattle                      | Artiodactyla | Mammalia | Argentina, Brazil, Canada, Malaysia, Nigeria, Romania, Russian Federation, South Africa, United States of America | (3, 4, 35, 147, 148, 189, 192, 300, 307-316) |
| <b>Pomona</b> | <b>Pomona</b> | <i>Canis lupus</i>              | Dog                         | Carnivora    | Mammalia | Brazil, Malaysia, United States of America  | (153, 173, 317)                              |
| <b>Pomona</b> | <b>Pomona</b> | <i>Capra aegagrus</i>           | Goat                        | Artiodactyla | Mammalia | Spain   | (207)  |
| <b>Pomona</b> | <b>Pomona</b> | <i>Cavia pamparum</i>           | Pampas cavy                 | Rodentia     | Mammalia | Argentina   | (318)  |
| <b>Pomona</b> | <b>Pomona</b> | <i>Cavia porcellus</i>          | Guinea pig                  | Rodentia     | Mammalia | Peru  | (135)  |

|        |        |                                   |                             |                  |         |  |  |
|--------|--------|-----------------------------------|-----------------------------|------------------|---------|--|--|
| Pomona | Pomona | <i>Didelphis albiventris</i>      | White eared opossum         | Didelphi morphia | Mamalia | Brazil   | (16)   |
| Pomona | Pomona | <i>Didelphis marsupialis</i>      | Common opossum              | Didelphi morphia | Mamalia | United States of America   | (101)  |
| Pomona | Pomona | <i>Equus caballus</i>             | Horse                       | Perissodactyla   | Mamalia | United Kingdom of Great Britain and Northern Ireland, United States of America                             | (38, 97, 303, 319, 320)                                |
| Pomona | Pomona | <i>Felis catus</i>                | Cat                         | Carnivora        | Mamalia | Malaysia, United States of America   | (27, 101, 321)   |
| Pomona | Pomona | <i>Felis rufa</i>                 | Wild cat                    | Carnivora        | Mamalia | United States of America   | (18, 95)   |
| Pomona | Pomona | <i>Marmota monax</i>              | Ground hog                  | Rodentia         | Mamalia | Canada   | (261, 322)   |
| Pomona | Pomona | <i>Mephitis mephitis</i>          | Striped skunk               | Carnivora        | Mamalia | United States of America   | (18, 95, 97, 101, 103, 202)                            |
| Pomona | Pomona | <i>Mephitis spp.</i>              | Skunk                       | Carnivora        | Mamalia | Canada   | (316, 322)   |
| Pomona | Pomona | <i>Mirounga angustirostris</i>    | Northern elephant seal      | Carnivora        | Mamalia | United States of America   | (323)  |
| Pomona | Pomona | <i>Mus musculus</i>               | House mouse                 | Rodentia         | Mamalia | Brazil   | (16)   |
| Pomona | Pomona | <i>Odocoileus virginianus</i>     | White tailed deer           | Artiodactyla     | Mamalia | Canada, United States of America   | (324-326)  |
| Pomona | Pomona | <i>Oligoryzomys nigripes</i>      | Black footed pygmy rice rat | Rodentia         | Mamalia | Brazil   | (16)   |
| Pomona | Pomona | <i>Ovis aries</i>                 | Sheep                       | Artiodactyla     | Mamalia | Canada, Spain, United Kingdom of Great Britain and Northern Ireland  | (43, 207, 303, 316)                                    |
| Pomona | Pomona | <i>Paradoxurus hermaphroditus</i> | Asian palm civet            | Carnivora        | Mamalia | Malaysia   | (27)   |
| Pomona | Pomona | <i>Procyon lotor</i>              | Raccoon                     | Carnivora        | Mamalia | United States of America   | (18, 97)   |
| Pomona | Pomona | <i>Rattus norvegicus</i>          | Norwegian rat               | Rodentia         | Mamalia | Colombia   | (268)  |
| Pomona | Pomona | <i>Rattus rattus</i>              | Black rat                   | Rodentia         | Mamalia | Brazil   | (16)   |
| Pomona | Pomona | <i>Sus scrofa</i>                 | Pig                         | Artiodactyla     | Mamalia | Brazil, Canada, Colombia, Hungary, Italy, Malaysia, New Zealand, Peru, Sri Lanka, United States of America | (130, 172, 173, 180, 219, 262, 270, 305, 316, 327-331) |
| Pomona | Pomona | <i>Vulpes spp.</i>                | Fox                         | Carnivora        | Mamalia | Canada   | (316)  |
| Pomona | Pomona | <i>Zalophus californianus</i>     | California sea lion         | Carnivora        | Mamalia | United States of America   | (332, 333)   |

|                  |                    |                                    |                              |                     |              |                          |                |
|------------------|--------------------|------------------------------------|------------------------------|---------------------|--------------|--------------------------|----------------|
| <b>Pomona</b>    | <b>Proechimys</b>  | <i>Philander spp.</i>              | Opossum                      | Didelphi<br>morphia | Mam<br>malia | Peru                     | (217)          |
| <b>Pomona</b>    | <b>Proechimys</b>  | <i>Proechimys<br/>semispinosus</i> | Spiny rat                    | Rodentia            | Mam<br>malia | Panama                   | (65)           |
| <b>Pomona</b>    | <b>Proechimys</b>  | <i>Rat spp.</i>                    | Rat                          | Rodentia            | Mam<br>malia | Peru                     | (217)          |
| <b>Pomona</b>    | <b>Tropica</b>     | <i>Liomys<br/>adpersus</i>         | Spiny pocket<br>mouse        | Rodentia            | Mam<br>malia | Panama                   | (137)          |
| <b>Pomona</b>    | <b>Tropica</b>     | <i>Mus musculus</i>                | House mouse                  | Rodentia            | Mam<br>malia | Brazil                   | (16, 107, 108) |
| <b>Pomona</b>    | <b>Tropica</b>     | <i>Proechimys<br/>semispinosus</i> | Spiny rat                    | Rodentia            | Mam<br>malia | Panama                   | (137)          |
| <b>Pomona</b>    | <b>Tsaratsovo</b>  | <i>Apodemus<br/>agrarius</i>       | Striped field mouse          | Rodentia            | Mam<br>malia | Croatia                  | (53)           |
| <b>Pomona</b>    | <b>Tsaratsovo</b>  | <i>Apodemus<br/>flavicollis</i>    | Yellow-necked field<br>mouse | Rodentia            | Mam<br>malia | Croatia                  | (53)           |
| <b>Pyrogenes</b> | <b>Abramis</b>     | <i>Philander<br/>opossum</i>       | Gray four-eyed<br>opossum    | Didelphi<br>morphia | Mam<br>malia | Nicaragua                | (174)          |
| <b>Pyrogenes</b> | <b>Guaratuba</b>   | <i>Philander<br/>opossum</i>       | Gray four-eyed<br>opossum    | Didelphi<br>morphia | Mam<br>malia | Brazil                   | (90)           |
| <b>Pyrogenes</b> | <b>Kwale</b>       | <i>Bos taurus</i>                  | Cattle                       | Artiodact<br>yla    | Mam<br>malia | Zimbabwe                 | (50, 334)      |
| <b>Pyrogenes</b> | <b>Manilae</b>     | <i>Rat spp.</i>                    | Rat                          | Rodentia            | Mam<br>malia | Philippines              | (139)          |
| <b>Pyrogenes</b> | <b>Manilae</b>     | <i>Rattus<br/>norvegicus</i>       | Norwegian rat                | Rodentia            | Mam<br>malia | Philippines              | (140, 335)     |
| <b>Pyrogenes</b> | <b>Manilae</b>     | <i>Rattus rattus</i>               | Black rat                    | Rodentia            | Mam<br>malia | Philippines              | (335)          |
| <b>Pyrogenes</b> | <b>Manilae</b>     | <i>Rattus spp.</i>                 | Rat                          | Rodentia            | Mam<br>malia | Philippines              | (133)          |
| <b>Pyrogenes</b> | <b>Manilae</b>     | <i>Rattus tanezumi</i>             | Oriental house rat           | Rodentia            | Mam<br>malia | Philippines              | (140)          |
| <b>Pyrogenes</b> | <b>Mombe</b>       | <i>Bos taurus</i>                  | Cattle                       | Artiodact<br>yla    | Mam<br>malia | Zimbabwe                 | (50, 334)      |
| <b>Pyrogenes</b> | <b>Myocastoris</b> | <i>Myocastor<br/>coypus</i>        | Nutria                       | Rodentia            | Mam<br>malia | United States of America | (336)          |
| <b>Pyrogenes</b> | <b>Nigeria</b>     | <i>Bos taurus</i>                  | Cattle                       | Artiodact<br>yla    | Mam<br>malia | Nigeria, Zimbabwe        | (50, 334, 337) |
| <b>Pyrogenes</b> | <b>Pyrogenes</b>   | <i>Bos taurus</i>                  | Cattle                       | Artiodact<br>yla    | Mam<br>malia | Nigeria                  | (2)            |

|           |           |                              |                                   |                 |         |                       |                 |
|-----------|-----------|------------------------------|-----------------------------------|-----------------|---------|-----------------------|-----------------|
| Pyrogenes | Pyrogenes | <i>Nectomys squamipes</i>    | South American water rat          | Rodentia        | Mamalia | Brazil                | (177)           |
| Pyrogenes | Pyrogenes | <i>Rat spp.</i>              | Field rat                         | Rodentia        | Mamalia | Thailand              | (20, 21)        |
| Pyrogenes | Pyrogenes | <i>Rat spp.</i>              | Rat                               | Rodentia        | Mamalia | Thailand              | (22)            |
| Pyrogenes | Pyrogenes | <i>Rattus rattus</i>         | Black rat                         | Rodentia        | Mamalia | Egypt                 | (178)           |
| Pyrogenes | Pyrogenes | <i>Rattus spp.</i>           | Rat                               | Rodentia        | Mamalia | Philippines, Thailand | (133, 134)      |
| Pyrogenes | Pyrogenes | <i>Sus scrofa</i>            | Pig                               | Artiodactyla    | Mamalia | Peru, Philippines     | (135, 338, 339) |
| Pyrogenes | Robinsoni | <i>Rattus sordidus</i>       | Canefield rat                     | Rodentia        | Mamalia | Australia             | (14)            |
| Pyrogenes | Robinsoni | <i>Uromys caudimaculatus</i> | Giant white-tailed rat            | Rodentia        | Mamalia | Australia             | (14)            |
| Pyrogenes | Varela    | Not stated                   | Opossum                           | Didelphimorphia | Mamalia | Nicaragua             | (65)            |
| Pyrogenes | Zanoni    | <i>Bos taurus</i>            | Cattle                            | Artiodactyla    | Mamalia | Australia             | (340)           |
| Pyrogenes | Zanoni    | <i>Isoodon macrourus</i>     | Northern brown bandicoot          | Peramelemorphia | Mamalia | Australia             | (14)            |
| Pyrogenes | Zanoni    | <i>Melomys cervinipes</i>    | Fawn-footed mosaic-tailed rat     | Rodentia        | Mamalia | Australia             | (28)            |
| Pyrogenes | Zanoni    | <i>Melomys lutillus</i>      | Papua grassland mosaic-tailed rat | Rodentia        | Mamalia | Australia             | (14)            |
| Pyrogenes | Zanoni    | <i>Mus musculus</i>          | House mouse                       | Rodentia        | Mamalia | Australia             | (14)            |
| Pyrogenes | Zanoni    | <i>Rattus fuscipes</i>       | Bush rat                          | Rodentia        | Mamalia | Australia             | (14)            |
| Pyrogenes | Zanoni    | <i>Rattus norvegicus</i>     | Norwegian rat                     | Rodentia        | Mamalia | Australia             | (14)            |
| Pyrogenes | Zanoni    | <i>Rattus rattus</i>         | Black rat                         | Rodentia        | Mamalia | Australia             | (14)            |
| Pyrogenes | Zanoni    | <i>Rattus sordidus</i>       | Canefield rat                     | Rodentia        | Mamalia | Australia             | (14)            |
| Pyrogenes | Zanoni    | <i>Uromys caudimaculatus</i> | Giant white-tailed rat            | Rodentia        | Mamalia | Australia             | (28)            |
| Pyrogenes | Zanoni    | Not stated                   | Rodent                            | Rodentia        | Mamalia | Australia             | (30)            |

|         |                               |                                |                        |                 |          |   |   |
|---------|-------------------------------|--------------------------------|------------------------|-----------------|----------|---|---|
| Ranarum | Pinchang                      | <i>Rana nigromaculata</i>      | Black spotted frog     | Anura           | Amphibia | China   | (341)   |
| Ranarum | Ranarum                       | <i>Equus caballus</i>          | Horse                  | Perissodactyla  | Mammalia | Brazil  | (342)   |
| Ranarum | Ranarum                       | <i>Rana pipiens</i>            | Northern leopard frog  | Anura           | Amphibia | United States of America  | (343)   |
| Sarmin  | Machiguenga                   | <i>Philander opossum</i>       | Gray four-eyed opossum | Didelphimorphia | Mammalia | Peru  | (145)   |
| Sarmin  | Rio                           | <i>Rattus rattus</i>           | Black rat              | Rodentia        | Mammalia | Brazil  | (344)   |
| Sarmin  | Weaveri                       | <i>Proechimys semispinosus</i> | Spiny rat              | Rodentia        | Mammalia | Panama  | (137)   |
| Sejroe  | Balcanica                     | <i>Bos taurus</i>              | Cattle                 | Artiodactyla    | Mammalia | United States of America, Zimbabwe  | (50, 314)   |
| Sejroe  | Balcanica                     | <i>Capra aegagrus</i>          | Goat                   | Artiodactyla    | Mammalia | New Zealand   | (329)   |
| Sejroe  | Balcanica                     | <i>Trichosurus vulpecula</i>   | Brushtailed possum     | Diprotodontia   | Mammalia | Australia, New Zealand  | (100, 111, 329, 345, 346)                             |
| Sejroe  | Caribe                        | <i>Rattus norvegicus</i>       | Norwegian rat          | Rodentia        | Mammalia | Trinidad and Tobago   | (72, 297)   |
| Sejroe  | Gorgas                        | <i>Proechimys semispinosus</i> | Spiny rat              | Rodentia        | Mammalia | Panama  | (65)  |
| Sejroe  | Guaricura                     | <i>Bos taurus</i>              | Cattle                 | Artiodactyla    | Mammalia | Brazil  | (218)   |
| Sejroe  | Guaricura                     | <i>Bubalus bubalis</i>         | Domestic water buffalo | Artiodactyla    | Mammalia | Brazil  | (347)   |
| Sejroe  | Hardjo Subtype Bovis          | <i>Bos taurus</i>              | Cattle                 | Artiodactyla    | Mammalia | Argentina, Australia, Canada, Netherlands, United Kingdom of Great Britain and Northern Ireland, United Republic of Tanzania, United States of America, Zimbabwe  | (50, 189, 200, 340, 348-354)                          |
| Sejroe  | Hardjo Subtype Not Determined | <i>Bos taurus</i>              | Cattle                 | Artiodactyla    | Mammalia | Argentina, Australia, Brazil, Canada, Colombia, Germany, Ireland, Malaysia, New Zealand, Nigeria, Portugal, Puerto Rico, South Africa, United Kingdom of Great Britain and Northern Ireland, United States of America | (3, 4, 35, 192, 193, 248, 250, 313-315, 329, 355-375) |
| Sejroe  | Hardjo Subtype Not Determined | <i>Chaetophractus villosus</i> | Big hairy armadillo    | Cingulata       | Mammalia | Argentina   | (123)   |
| Sejroe  | Hardjo Subtype Not Determined | <i>Equus caballus</i>          | Horse                  | Perissodactyla  | Mammalia | Argentina, United Kingdom of Great Britain and Northern Ireland   | (37, 376)   |
| Sejroe  | Hardjo Subtype Not Determined | <i>Mus spicilegus</i>          | Steppe mouse           | Rodentia        | Mammalia | Romania   | (220)   |



|        |                                  |                                    |                              |                               |              |   |                          |
|--------|----------------------------------|------------------------------------|------------------------------|-------------------------------|--------------|---|--------------------------|
| Sejroe | Hardjo Subtype<br>Not Determined | <i>Myocastor<br/>coypus</i>        | Nutria                       | Rodentia                      | Mam<br>malia | United Kingdom of Great Britain and Northern<br>Ireland   | (377)                    |
| Sejroe | Hardjo Subtype<br>Not Determined | <i>Ovis aries</i>                  | Sheep                        | Artiodact<br>yla              | Mam<br>malia | Australia, New Zealand, United Kingdom of Great<br>Britain and Northern Ireland   | (329, 361, 378, 379)     |
| Sejroe | Hardjo Subtype<br>Not Determined | <i>Procyon lotor</i>               | Raccoon                      | Carnivora<br>Artiodact<br>yla | Mam<br>malia | United States of America<br>Ireland, United Kingdom of Great Britain and<br>Northern Ireland  | (97)                     |
| Sejroe | Hardjo Subtype<br>Not Determined | <i>Sus scrofa</i>                  | Pig                          | Artiodact<br>yla              | Mam<br>malia | Ireland, United Kingdom of Great Britain and<br>Northern Ireland  | (44, 329, 361, 362, 380) |
| Sejroe | Prajitno                         | <i>Apodemus<br/>sylvaticus</i>     | Common field<br>mouse        | Rodentia                      | Mam<br>malia | Romania   | (220)                    |
| Sejroe | Prajitno                         | <i>Bos taurus</i>                  | Cattle                       | Artiodact<br>yla              | Mam<br>malia | Canada, United Kingdom of Great Britain and<br>Northern Ireland   | (349-352, 381)           |
| Sejroe | Istrica                          | <i>Mus musculus</i>                | House mouse                  | Rodentia                      | Mam<br>malia | Croatia   | (53)                     |
| Sejroe | Medanensis                       | <i>Isoodon<br/>macrourus</i>       | Northern brown<br>bandicoot  | Peramele<br>morphia           | Mam<br>malia | Australia   | (28)                     |
| Sejroe | Medanensis                       | <i>Perameles<br/>nasuta</i>        | Long-nosed<br>bandicoot      | Peramele<br>morphia           | Mam<br>malia | Australia   | (28)                     |
| Sejroe | Polonica                         | <i>Erinaceus<br/>europaeus</i>     | European<br>hedgehog         | Eulipotyp<br>hla              | Mam<br>malia | Poland  | (382)                    |
| Sejroe | Polonica                         | <i>Mus musculus</i>                | House mouse                  | Rodentia                      | Mam<br>malia | Romania   | (224)                    |
| Sejroe | Polonica                         | <i>Rattus rattus</i>               | Black rat                    | Rodentia                      | Mam<br>malia | Egypt   | (178)                    |
| Sejroe | Recreo                           | <i>Philander<br/>opossum</i>       | Gray four-eyed<br>opossum    | Didelphi<br>morphia           | Mam<br>malia | Nicaragua   | (65)                     |
| Sejroe | Ricardi                          | <i>Bos taurus</i>                  | Cattle                       | Artiodact<br>yla              | Mam<br>malia | Peru  | (138)                    |
| Sejroe | Ricardi                          | <i>Equus caballus</i>              | Horse                        | Perissoda<br>ctyla            | Mam<br>malia | Austria, Germany, Italy, Luxembourg, Netherlands,<br>Portugal, Switzerland, United Kingdom of Great<br>Britain and Northern Ireland | (36)                     |
| Sejroe | Saxkoebing                       | <i>Apodemus<br/>flavicollis</i>    | Yellow-necked field<br>mouse | Rodentia                      | Mam<br>malia | Croatia, Croatia, Denmark, United Kingdom of Great<br>Britain and Northern Ireland  | (34, 51, 361, 383)       |
| Sejroe | Saxkoebing                       | <i>Apodemus<br/>sylvaticus</i>     | Common field<br>mouse        | Rodentia                      | Mam<br>malia | Croatia, Romania, United Kingdom of Great Britain<br>and Northern Ireland   | (34, 220, 361)           |
| Sejroe | Saxkoebing                       | <i>Canis lupus</i>                 | Dog                          | Carnivora                     | Mam<br>malia | United Kingdom of Great Britain and Northern<br>Ireland   | (361)                    |
| Sejroe | Saxkoebing                       | <i>Clethrionomys<br/>glareolus</i> | Bank vole                    | Rodentia                      | Mam<br>malia | United Kingdom of Great Britain and Northern<br>Ireland   | (361)                    |
| Sejroe | Saxkoebing                       | <i>Erinaceus<br/>europaeus</i>     | Hedgehog                     | Eulipotyp<br>hla              | Mam<br>malia | Italy   | (11)                     |

|        |            |                                    |                           |                  |              |  |                    |
|--------|------------|------------------------------------|---------------------------|------------------|--------------|--|--------------------|
| Sejroe | Saxkoebing | <i>Meles meles</i>                 | Badger                    | Carnivora        | Mam<br>malia | United Kingdom of Great Britain and Northern<br>Ireland          | (361, 362)         |
| Sejroe | Saxkoebing | <i>Microtus<br/>agrestis</i>       | Field vole                | Rodentia         | Mam<br>malia | Germany, United Kingdom of Great Britain and<br>Northern Ireland | (361, 362, 384)    |
| Sejroe | Saxkoebing | <i>Microtus arvalis</i>            | Common vole               | Rodentia         | Mam<br>malia | Russian Federation   | (385)              |
| Sejroe | Saxkoebing | <i>Microtus spp.</i>               | Vole                      | Rodentia         | Mam<br>malia | United Kingdom of Great Britain and Northern<br>Ireland          | (362)              |
| Sejroe | Saxkoebing | <i>Mus musculus</i>                | House mouse               | Rodentia         | Mam<br>malia | Germany, Romania   | (224, 243)         |
| Sejroe | Saxkoebing | <i>Mus spicilegus</i>              | Steppe mouse              | Rodentia         | Mam<br>malia | Romania  | (220, 224)         |
| Sejroe | Saxkoebing | <i>Vulpes vulpes</i>               | Red fox                   | Carnivora        | Mam<br>malia | United Kingdom of Great Britain and Northern<br>Ireland          | (361)              |
| Sejroe | Saxkoebing | Not stated                         | Rodent                    | Rodentia         | Mam<br>malia | Poland   | (29)               |
| Sejroe | Saxkoebing | Not stated                         | Vole                      | Rodentia         | Mam<br>malia | United Kingdom of Great Britain and Northern<br>Ireland          | (361)              |
| Sejroe | Sejroe     | <i>Bos taurus</i>                  | Cattle                    | Artiodact<br>yla | Mam<br>malia | United Kingdom of Great Britain and Northern<br>Ireland          | (386)              |
| Sejroe | Sejroe     | <i>Canis lupus</i>                 | Dog                       | Carnivora        | Mam<br>malia | Italy  | (387)              |
| Sejroe | Sejroe     | <i>Capra aegagrus</i>              | Goat                      | Artiodact<br>yla | Mam<br>malia | Spain  | (207)              |
| Sejroe | Sejroe     | <i>Herpestes<br/>auropunctatus</i> | Lesser Indian<br>mongoose | Carnivora        | Mam<br>malia | Guadeloupe, United States of America                             | (13, 24, 106, 388) |
| Sejroe | Sejroe     | <i>Lacerta agilis</i>              | Sand lizard               | Squamata         | Reptil<br>ia | Slovakia   | (389)              |
| Sejroe | Sejroe     | <i>Microtus arvalis</i>            | Common vole               | Rodentia         | Mam<br>malia | Poland   | (199)              |
| Sejroe | Sejroe     | <i>Microtus fortis</i>             | Reed vole                 | Rodentia         | Mam<br>malia | China  | (1)                |
| Sejroe | Sejroe     | <i>Mus musculus</i>                | House mouse               | Rodentia         | Mam<br>malia | Romania  | (224)              |
| Sejroe | Sejroe     | <i>Mus spicilegus</i>              | Steppe mouse              | Rodentia         | Mam<br>malia | Romania  | (220, 224)         |
| Sejroe | Sejroe     | <i>Myocastor<br/>coypus</i>        | Nutria                    | Rodentia         | Mam<br>malia | France   | (254)              |
| Sejroe | Sejroe     | <i>Ovis aries</i>                  | Sheep                     | Artiodact<br>yla | Mam<br>malia | Spain  | (207)              |

|           |             |                                    |                               |                        |              |                          |            |
|-----------|-------------|------------------------------------|-------------------------------|------------------------|--------------|--------------------------|------------|
| Sejroe    | Sejroe      | Not stated                         | Rodent                        | Rodentia               | Mam<br>malia | Poland                   | (29)       |
| Sejroe    | Unipertama  | <i>Bos taurus</i>                  | Cattle                        | Artiodact<br>yla       | Mam<br>malia | Malaysia                 | (4, 390)   |
| Sejroe    | Wolffi      | <i>Apodemus<br/>sylvaticus</i>     | Common field<br>mouse         | Rodentia<br>Artiodact  | Mam<br>malia | Romania                  | (220)      |
| Sejroe    | Wolffi      | <i>Bos taurus</i>                  | Cattle                        | yla                    | Mam<br>malia | Brazil                   | (313)      |
| Sejroe    | Wolffi      | <i>Mus musculus</i>                | House mouse                   | Rodentia               | Mam<br>malia | Romania                  | (222)      |
| Sejroe    | Wolffi      | <i>Mus spicilegus</i>              | Steppe mouse                  | Rodentia<br>Artiodact  | Mam<br>malia | Romania                  | (220, 222) |
| Semeranga | Patoc       | <i>Bos taurus</i>                  | Cattle                        | yla                    | Mam<br>malia | United States of America | (391)      |
| Semeranga | Patoc       | <i>Felis catus</i>                 | Cat                           | Carnivora              | Mam<br>malia | Egypt                    | (178)      |
| Shermani  | Babudieri   | <i>Canis lupus</i>                 | Dog                           | Carnivora<br>Artiodact | Mam<br>malia | Colombia                 | (235)      |
| Shermani  | Babudieri   | <i>Sus scrofa</i>                  | Pig                           | yla                    | Mam<br>malia | Peru                     | (219)      |
| Shermani  | Carimagua   | <i>Caluromys<br/>philander</i>     | Bare-tailed woolly<br>opossum | Didelphi<br>morphia    | Mam<br>malia | Colombia                 | (392)      |
| Shermani  | Luis        | <i>Philander<br/>opossum</i>       | Gray four-eyed<br>opossum     | Didelphi<br>morphia    | Mam<br>malia | Peru                     | (145)      |
| Shermani  | Shermani    | <i>Proechimys<br/>semispinosus</i> | Spiny rat                     | Rodentia               | Mam<br>malia | Panama                   | (65)       |
| Tarassovi | Atchafalaya | <i>Didelphis<br/>marsupialis</i>   | Common opossum                | Didelphi<br>morphia    | Mam<br>malia | United States of America | (104)      |
| Tarassovi | Atchafalaya | <i>Herpestes<br/>auropunctatus</i> | Lesser Indian<br>mongoose     | Carnivora              | Mam<br>malia | Grenada                  | (66)       |
| Tarassovi | Bakeri      | <i>Didelphis<br/>marsupialis</i>   | Common opossum                | Didelphi<br>morphia    | Mam<br>malia | United States of America | (104)      |
| Tarassovi | Bakeri      | Not stated                         | Opossum                       | Didelphi<br>morphia    | Mam<br>malia | United States of America | (19)       |
| Tarassovi | Bravo       | <i>Liomys<br/>adpersus</i>         | Spiny pocket<br>mouse         | Rodentia               | Mam<br>malia | Panama                   | (137)      |
| Tarassovi | Bravo       | <i>Proechimys<br/>semispinosus</i> | Spiny rat                     | Rodentia               | Mam<br>malia | Panama                   | (137)      |
| Tarassovi | Chagres     | <i>Proechimys<br/>semispinosus</i> | Spiny rat                     | Rodentia               | Mam<br>malia | Panama                   | (65)       |

|           |           |                                  |                                |                  |           |  |            |
|-----------|-----------|----------------------------------|--------------------------------|------------------|-----------|--|------------|
| Tarassovi | Darien    | <i>Philander opossum</i>         | Gray four-eyed opossum         | Didelphi morphia | Mam malia | Panama                                       | (65)       |
| Tarassovi | Gatuni    | <i>Proechimys semispinosus</i>   | Spiny rat                      | Rodentia         | malia     | Panama                                       | (65)       |
| Tarassovi | Guidae    | <i>Echymipera kalubu</i>         | Common echymipera              | Peramele morphia | Mam malia | Papua New Guinea                             | (393)      |
| Tarassovi | Guidae    | <i>Sus scrofa</i>                | Pig                            | Artiodact yla    | Mam malia | Romania, Russian Federation                  | (394, 395) |
| Tarassovi | Kanana    | <i>Tatera robusta</i>            | Fringe-tailed gerbil           | Rodentia         | Mam malia | Kenya  | (83)       |
| Tarassovi | Navet     | <i>Bufo marinus</i>              | Giant marine toad              | Anura            | Amphibia  | Grenada                                      | (66)       |
| Tarassovi | Ngavi     | <i>Bos taurus</i>                | Cattle                         | Artiodact yla    | Mam malia | Zimbabwe                                     | (50, 396)  |
| Tarassovi | Osetica   | <i>Sus scrofa</i>                | Pig                            | Artiodact yla    | Mam malia | Russian Federation                           | (394)      |
| Tarassovi | Rama      | <i>Philander opossum</i>         | Gray four-eyed opossum         | Didelphi morphia | Mam malia | Nicaragua                                    | (174)      |
| Tarassovi | Tarassovi | <i>Apodemus flavicollis</i>      | Yellow-necked field mouse      | Rodentia         | Mam malia | Romania                                      | (220)      |
| Tarassovi | Tarassovi | <i>Apodemus sylvaticus</i>       | Common field mouse             | Rodentia         | Mam malia | Romania                                      | (395)      |
| Tarassovi | Tarassovi | <i>Bos taurus</i>                | Cattle                         | Artiodact yla    | Mam malia | Russian Federation, United States of America | (397, 398) |
| Tarassovi | Tarassovi | <i>Canis lupus</i>               | Dog                            | Carnivora        | Mam malia | New Zealand                                  | (329)      |
| Tarassovi | Tarassovi | <i>Didelphis marsupialis</i>     | Common opossum                 | Didelphi morphia | Mam malia | United States of America                     | (104)      |
| Tarassovi | Tarassovi | <i>Hydromys chrysogaster</i>     | Rakali (water rat)             | Rodentia         | Mam malia | Australia                                    | (28)       |
| Tarassovi | Tarassovi | <i>Mephitis mephitis</i>         | Striped skunk                  | Carnivora        | Mam malia | United States of America                     | (102-104)  |
| Tarassovi | Tarassovi | <i>Pseudemys scripta-elegans</i> | Slider turtle<br>Bower's white | Testudines       | Reptilia  | United States of America                     | (399)      |
| Tarassovi | Tarassovi | <i>Rattus bowersi</i>            | toothed rat                    | Rodentia         | Mam malia | Malaysia                                     | (27)       |
| Tarassovi | Tarassovi | <i>Rattus fuscipes</i>           | Bush rat                       | Rodentia         | Mam malia | Australia                                    | (14)       |
| Tarassovi | Tarassovi | <i>Rattus spp.</i>               | Rat                            | Rodentia         | Mam malia | Philippines                                  | (133)      |

|              |           |                                  |                        |                 |         |  |                          |
|--------------|-----------|----------------------------------|------------------------|-----------------|---------|--|--------------------------|
| Tarassovi    | Tarassovi | <i>Sundamys muelleri</i>         | Mueller's rat          | Rodentia        | Mamalia | Malaysia   | (27)                     |
| Tarassovi    | Tarassovi | <i>Sus scrofa</i>                | Pig                    | Artiodactyla    | Mamalia | Chile, Cuba, India, New Zealand, Romania, Russian Federation | (275, 394, 395, 400-403) |
| Tarassovi    | Tarassovi | <i>Uromys caudimaculatus</i>     | Giant white-tailed rat | Rodentia        | Mamalia | Australia  | (14, 28)                 |
| Tarassovi    | Topaz     | <i>Bos taurus</i>                | Cattle                 | Artiodactyla    | Mamalia | Australia  | (404)                    |
| Tarassovi    | Topaz     | Not stated                       | Bandicoot              | Peramelemorphia | Mamalia | Australia  | (405)                    |
| Tarassovi    | Vietnam   | <i>Sus scrofa</i>                | Pig                    | Artiodactyla    | Mamalia | Viet Nam, Russian Federation                                 | (397)                    |
| Tarassovi    | Yunxian   | <i>Sus scrofa</i>                | Pig                    | Artiodactyla    | Mamalia | China  | (293)                    |
| Undesignated | Bananal   | <i>Hydrochoerus hydrochaeris</i> | Capybara               | Rodentia        | Mamalia | Brazil   | (172, 406)               |
| Undesignated | Biflexa   | <i>Bos taurus</i>                | Cattle                 | Artiodactyla    | Mamalia | Malaysia   | (4)                      |
| Undesignated | Carioca   | <i>Capra aegagrus</i>            | Goat                   | Artiodactyla    | Mamalia | Brazil   | (407)                    |
| Undesignated | Neville   | <i>Bos taurus</i>                | Cattle                 | Artiodactyla    | Mamalia | Malaysia   | (408)                    |
| Undesignated | Room22    | <i>Crocidura russula</i>         | White-toothed shrew    | Eulipotyphla    | Mamalia | Ireland  | (409)                    |

## References

1. Guo S, Wu Z, Li W. Study on the factors leading to the prevalence of leptospirosis in flood-hit areas in Hunan Province. *China Tropical Medicine*. 2004;4(3):310-3.
2. Diallo AA, Dennis SM. Bacteriological survey of leptospirosis in Zaria, Nigeria. *Tropical and geographical medicine*. 1982;34(1):29-34.
3. Bahaman AR, Chumponbuchorn K. Cattle as maintenance host of *Leptospira interrogans* serovar Pomana infection in Malaysia. *Jurnal Veterinar Malaysia*. 1993;5(1):57-8.
4. Bahaman AR, Ibrahim AL, Stallman ND, Tinniswood RD. The bacteriological prevalence of leptospiral infection in cattle and buffaloes in West Malaysia. *Epidemiology and Infection*. 1988;100(2):239-46.
5. Bahaman AR, Ibrahim AL. Serological and bacteriological study of leptospiral infection in a cattle herd in Malaysia. *Veterinary Record*. 1986;119(13):325-6.
6. Iwata A. Studies on bovine leptospirosis in Japan. An etiological study on the so-called bovine hemoglobinuria. *Tokushima Jour Exptl Med*. 1961;8((1)):15-37.
7. Kita E, Akitoshi I, Takamura M. Studies on bovine leptospirosis in Japan. IV. Bovine hemoglobinuria occurring in cattle in the northern part of Hyogo prefecture, and Isolation of *Leptospira Australis A* from cattle. *Japanese Jour Vet Sci*. 1960;22((5)):259-64.
8. Bertasio C, Boniotti MB, Lucchese L, Ceglie L, Bellinati L, Mazzucato M, et al. Detection of new *Leptospira* genotypes infecting symptomatic dogs: is a new vaccine formulation needed? *Pathogens*. 2020;9(6).
9. Carlos ER, Kundin WD, Tsai CC, Watten RH, Irving GS, Villanueva C. Leptospirosis in the Philippines. VII. Serologic and isolation studies on horses. *Southeast Asian J Trop Med Public Health*. 1971;2(2):151-2.
10. Babudieri B, Ghysels G. Studies on *Leptospira* strains isolated from hedgehogs (*Erinaceus europaeus L.*) in Belgium Engl. summ. *Ann Inst Pasteur*. 1966;110((4)):627-34.
11. Babudieri B, Farina R. The leptospirae of the Italian hedge-hog. *Pathol Microbiol [Basel]*. 1964;27((1)):103-16.
12. van der Hoeden J, Szenberg E. Infections with *Leptospira Mini Szwajizak* in man and animals in Israel. *Zoonoses Res*. 1962;1((14)):251-76.
13. Michel V, Pascal M, Fillonneau C, Andre-Fontaine G. Wild mammals and *Leptospira* transmission risk in the French West Indies. *EcoHealth*. 2011;7(Suppl. 1):S71-S.
14. Emanuel ML, Mackerras IM, Smith DJW. The epidemiology of leptospirosis in North Queensland. I. General survey of animal hosts. *J Hyg*. 1964;62((4)):451-84.
15. Yeh YC, S.Young S. Isolation of *Leptospira* from wild rats in Taiwan. *Mem Coll Agr Nat Taiwan Univ*. 1965;8((2)):184-95.
16. Cordeiro F, Sulzer CR, Ramos AA. *Leptospira interrogans* in several wildlife species in southeast Brazil. *Pesquisa Veterinaria Brasileira*. 1981;1(1):19-29.
17. Galton MM, Hirschberg N, Menges RW, Hines MP, Habermann R. An investigation of possible wild animal hosts of leptospirae in the area of the "Fort Bragg fever" outbreaks. *Amer Jour Publ Health*. 1959;49((10)):1343-8.
18. Mc KS, Gorman GW, Chapman JF, Galton MM, Powers DK. Incidence of leptospirosis in wild mammals from Southwestern Georgia, with a report of new hosts for six serotypes of leptospirae. *Am J Trop Med Hyg*. 1958;7(6):646-55.
19. Galton MM, Powers DK, McKeever S, Gorman GW. Identification of two 435. Leptospiral serotypes new to the United States. *Publ Health Repts*. 1957;72((5)):431-5.

20. Kositanont U, Chotinantakul K, Phulsuksombati D, Tribuddharat C. Assessment of Southern blot ribotyping for differentiation of *Leptospira* strains isolated from field rats. *Journal of Microbiological Methods*. 2007;69(2):288-97.
21. Kositanont U. Fingerprints by pulsed-field gel electrophoresis of leptospire isolates from field rats and comparison with reference *Leptospira* serovars. *Asian Biomedicine*. 2012;6(4):1286.
22. Douchchawee G, Phulsuksombati D, Naigowit P, Khoaprasert Y, Sangjun N, Kongtim S, et al. Survey of leptospirosis of small mammals in Thailand. *Southeast Asian Journal of Tropical Medicine and Public Health*. 2005;36(6):1516-22.
23. Slack AT, Symonds ML, Dohnt MF, Smythe LD. The epidemiology of leptospirosis and the emergence of *Leptospira borgpetersenii* serovar Arborea in Queensland, Australia, 1998-2004. *Epidemiology and Infection*. 2006;134(6):1217-25.
24. Minette HP. Leptospirosis in rodents and mongoose on the island of Hawaii. *Amer J Trop Med Hyg*. 1964;13((6)):826-32.
25. Alicata JE. Observations on leptospiral infections in Samoa Hawaii. *Med Jour*. 1949;9:85-9.
26. Fresh JW, Tsai CC, Lai CH, Chang CT. Leptospirosis in man and rodents on Taiwan. *Am J Trop Med Hyg*. 1968;17(5):760-8.
27. Smith CE, Turner LH, Harrison JL, Broom JC. Animal leptospirosis in Malaya: 1. Methods, zoogeographical background, and broad analysis of results. *Bulletin of the World Health Organization*. 1961;24(1):5-21.
28. Battey YM, Smith DJW, Barrow GJ. The epidemiology of leptospirosis in North Queensland, II. Further observations on the hosts in the Mossman district. *J Hyg*. 1964;62((4)):465-94.
29. Parnas J, Lazuga K, Dabrowski T, Koslak A. Strains of *Leptospirae* evoking swamp fever in Southeastern Poland: A four-year survey. *Jour Infect Dis*. 1961;108((3)):243-6.
30. Tulsiani SM, Cobbold RN, Graham GC, Dohnt MF, Burns MA, Leung LK, et al. The role of fruit bats in the transmission of pathogenic leptospire in Australia. *Ann Trop Med Parasitol*. 2011;105(1):71-84.
31. Gravekamp C, Korver H, Montgomery J, Everard COR, Carrington D, Ellis WA, et al. Leptospire isolates from toads and frogs on the island of Barbados. *Zentralblatt fuer Bakteriologie*. 1991;275(3):403-11.
32. Everard CO, Carrington DG, Korver H, Burke R, Everard JD, Gravekamp C. Leptospire in the whistling frog (*Eleutherodactylus johnstonei*) on Barbados. *The Journal of tropical medicine and hygiene*. 1990;93(2):140-5.
33. Wolff JW, Bohlander HJ, Sundharagiati B. *Leptospira* Bangkok, a new serotype of the Australis group isolated from a dog. *Trop Geogr Med*. 1965;17((1)):20-1.
34. Milas Z, Majetic ZS, Habus J, Perko VM, Staresina V, Barbic L, et al. The occurrence and maintenance of *Leptospira* serovars Australis and Bratislava in domestic and wild animals in Croatia. *Veterinarski Arhiv*. 2013;83(4):357-69.
35. Ajayi OL, Antia RE, Awoyomi OJ, Oladipo TM, Adebawale OO. Cultural, histochemical, and immunohistochemical detection of pathogenic *Leptospira* species in the kidneys of cattle slaughtered in two abattoirs in Southwest Nigeria. *J Immunoassay Immunochem*. 2020;41(3):337-53.
36. Hartskeerl RA, Goris MGA, Brem S, Meyer P, Kopp H, Gerhards H, et al. Classification of *Leptospira* from the eyes of horses suffering from recurrent uveitis. *Journal of Veterinary Medicine Series B*. 2004;51(3):110-5.

37. Ellis WA, O'Brien JJ, Cassells JA, Montgomery J. Leptospiral infection in horses in Northern Ireland: serological and microbiological findings. *Equine veterinary journal*. 1983;15(4):317-20.
38. Ellis WA, Bryson DG, O'Brien JJ, Neill SD. Leptospiral infection in aborted equine fetuses. *Equine veterinary journal*. 1983;15(4):321-4.
39. Hathaway SC, Little TWA, Stevens AE, Ellis WA. Serovar identification of leptospire of the Australis serogroup isolated from free-living and domestic species in the United Kingdom. *Research in Veterinary Science*. 1983;35(1):64-8.
40. Mateev D, Manev KH. Leptospiral serotypes of serogroup Australis in Bulgaria. *Epidemiologiya i Mikrobiologiya i Infektsiozni Bolesti*. 1972;9(3):264-8.
41. Wolff JW, Bohlander HJ. Leptospiral infections of hedgehogs in the Netherlands. *Trop Geogr Med*. 1965;17((1)):9-16.
42. Anan'In VV. Serological groups of *Leptospira* Autumnalis and Australis A in the Soviet Union English summ. *Zh Mikrobiol Epidemiol Immunobiol*. 1964;41((3)):15-9.
43. Ellis WA, Bryson DG, Neill SD, McParland PJ, Malone FE. Possible involvement of leptospire in abortion, stillbirths and neonatal deaths in sheep. *The Veterinary record*. 1983;112(13):291-3.
44. Ellis WA, McParland PJ, Bryson DG, Cassells JA. Prevalence of *Leptospira* infection in aborted pigs in Northern Ireland UK. *Veterinary Record*. 1986;118(3):63-5.
45. Ellis WA, McParland PJ, Bryson DG, Cassells JA. Boars as carriers of *Leptospire* of the Australis serogroup on farms with an abortion problem. *Veterinary Record*. 1986;118(20):563-.
46. Ellis WA, Montgomery JM, Thiermann AB. Restriction endonuclease analysis as a taxonomic tool in the study of pig isolates belonging to the Australis serogroup of *Leptospira interrogans*. *Journal of clinical microbiology*. 1991;29(5):957-61.
47. Ellis WA, Thiermann AB. Isolation of *Leptospira interrogans* serovar Bratislava from sows in Iowa. *American journal of veterinary research*. 1986;47(7):1458-60.
48. Schonberg A, Hahnhey B, Kampe U, Schmidt K, Ellis WA. The isolation and identification of *Leptospira-interrogans* serovar Bratislava from a pig in Germany. *Journal of Veterinary Medicine Series B-Zentralblatt Fur Veterinarmedizin Reihe B-Infectious Diseases and Veterinary Public Health*. 1992;39(5):362-8.
49. Hamond C, Martins G, Loureiro AP, Bremont S, Medeiros MA, Bourhy P, et al. First isolation and characterization of *Leptospira interrogans* serogroup Australis from swine in Brazil. *Pesquisa Veterinaria Brasileira*. 2015;35(1):6-8.
50. Feresu SB. DNA relatedness of *Leptospira* strains isolated from beef cattle in Zimbabwe. *International Journal of Systematic Bacteriology*. 1999;49(3):1111-7.
51. Majetic ZS, Galloway R, Sabljic ER, Milas Z, Perko VM, Habus J, et al. Epizootiological survey of small mammals as *Leptospira* spp. reservoirs in eastern Croatia. *Acta Tropica*. 2014;131:111-6.
52. Karmanska K. Studies on the Wroclaw *Leptospira* strain belonging to Javanica serogroup. *Acta Microbiol Pol*. 1963;12((1)):55-60.
53. Turk N, Milas Z, Margaletic J, Staresina V, Slavica A, Riquelme-Sertour N, et al. Molecular characterization of *Leptospira* spp. strains isolated from small rodents in Croatia. *Epidemiology and infection*. 2003;130(1):159-66.
54. Chernukha lu G, Karaseva EV. [Leptospiral infections of the Lora type (Australis serological group) in the Georgia SSR]. *Zh Mikrobiol Epidemiol Immunobiol*. 1964;41(5):77-81.



55. Chernukha YG, Karaseva EV. *Leptospira* infection of serotype Lora (Australis group) found in the USSR. Trop Geogr Med. 1965;17((1)):22-5.
56. Manev C, Yaneva V, Yanakieva M, Uzunov G. A natural focus of infection with leptospire of the serovar Lora in Bulgaria. Tropical and geographical medicine. 1980;32(3):256-8.
57. Cvetko L, Turk N, Markotic A, Milas Z, Margaletic J, Miletic-Medved M, et al. Short report: Dual infections with Puumala virus and *Leptospira interrogans* serovar Lora in a bank vole (*Clethrionomys glareolus*). American Journal of Tropical Medicine and Hygiene. 2006;74(4):612-4.
58. van den Ingh TS, Hartman EG, Bercovich Z. Clinical *Leptospira interrogans* serogroup Australis serovar lora infection in a stud farm in The Netherlands. The Veterinary quarterly. 1989;11(3):175-82.
59. Mgode GF, Machang'u RS, Mhamphi GG, Katakweba A, Mulungu LS, Durnez L, et al. *Leptospira* serovars for diagnosis of leptospirosis in humans and animals in Africa: common *Leptospira* isolates and reservoir hosts. PLoS Negl Trop Dis. 2015;9(12):e0004251.
60. Steinen ACM, Schuurman JL, Gravekamp C, Korver H, Terpstra WJ. Muskrats as carriers of pathogenic leptospire in The Netherlands. Antonie van Leeuwenhoek. 1992;61(1):43-50.
61. Hartman EG, Brummelman B, Dikken H. *Leptospirae* of serotype lora of the serogroup Australis isolated for the first time from swine in the Netherlands. Tijdschrift voor diergeneeskunde. 1975;100(8):421-5.
62. Hathaway SC, Little TW, Stevens AE. Identification of a reservoir of *Leptospira interrogans* serovar Muenchen in voles (*Microtus agrestis* and *Clethrionomys glareolus*) in England. Zentralblatt fur Bakteriologie, Mikrobiologie und Hygiene 1 Abt Originale A, Medizinische Mikrobiologie, Infektionskrankheiten und Parasitologie = International journal of microbiology and hygiene A, Medical microbiology, infectiousdiseases, parasitology. 1983;254(1):123-8.
63. Ellis WA, McParland PJ, Bryson DG, Thiermann AB, Montgomery J. Isolation of *Leptospire*s from the genital tract and kidneys of aborted sows. Veterinary Record. 1986;118(11):294-5.
64. Hathaway SC, Little TW, Stevens AE. Isolation of *Leptospira interrogans* serovar Muenchen from a sow with a history of abortion. The Veterinary record. 1982;111(5):100-2.
65. Sulzer K, Pope V, Rogers F. New leptospiral serotypes (serovars) from the Western Hemisphere isolated during 1964 through 1970. Revista latinoamericana de microbiologia. 1982;24(1):15-7.
66. Everard CO, Fraser-Chanpong GM, Bhagwandin LJ, Race MW, James AC. Leptospire in wildlife from Trinidad and Grenada. Journal of wildlife diseases. 1983;19(3):192-9.
67. Isolation of a new serotype of *Leptospira* from *Bombina orientalis* (Boulenger). Zhonghua yu fang yi xue za zhi [Chinese journal of preventive medicine]. 1983;17(5):283-4.
68. Silva I. A new leptospiral serotype isolated in Salvador Bahia state. Revista de Microbiologia. 1976;7(2):35-7.
69. Kitaoka M, Fujikura T. Isolation of Icterohaemorrhagiae from *Microtus monte belli* trapped at the Nagaoka area, Niigata Prefecture in Japan. International journal of zoonoses. 1975;2(2):100-4.
70. Saravanan R, Rajendran P, Thyagarajan SP, Smythe LD, Norris MA, Symonds ML, et al. *Leptospira* Autumnalis isolated from a human case from Avadi, India, and the serovar's

predominance in local rat and bandicoot populations. *Annals of Tropical Medicine and Parasitology*. 2000;94(5):503-6.

71. Alexander AD, Wetmore PW, Evans LB, Jeffries H, Gleiser CA. Classification of leptospiral isolates from Malaya. Thailand and North Borneo. *Amer Jour Trop Med and Hyg*. 1955;4(3):492-506.
72. Everard CO, Sulzer CR, Bhagwandin LJ, Fraser-Chanpong GM, James AC. Pathogenic *Leptospira* isolates from the Caribbean Islands of Trinidad, Grenada and St. Vincent. *International journal of zoonoses*. 1980;7(2):90-100.
73. McKeever S, Gorman GW, Galton MM, Hall AD. The raccoon, *Procyon lotor*, a natural host of *Leptospira* autumnalis. *Amer Jour Hyg*. 1958;68(1):13-4.
74. Bunnag T, Potha U, Thirachandra S, Impand P. Leptospirosis in man and rodents in north and northeast Thailand. *Southeast Asian Journal of Tropical Medicine and Public Health*. 1983;14(4):481-7.
75. Priya CG, Hoogendijk KT, Berg MVD, Rathinam SR, Ahmed A, Muthukkaruppan VR, et al. Field rats form a major infection source of leptospirosis in and around Madurai, India. *Journal of Postgraduate Medicine*. 2007;53(4):236-40.
76. Jones CJ, Taylor KD, Myers DM, Turner LH, Everard CO. Pathogenic *Leptospira* isolates from the Caribbean island of Barbados. *International Journal of Zoonoses*. 1982;9(2):138-46.
77. Everard CO, Carrington D, Korver H, Everard JD. Leptospire in the marine toad (*Bufo marinus*) on Barbados. *Journal of wildlife diseases*. 1988;24(2):334-8.
78. Jones CJ, Sulzer KR, Everard COR, Vaughn AW, Innis VA. Bim, a new serovar of *Leptospira interrogans* isolated from a dog in Barbados. *Journal of Clinical Microbiology*. 1984;19(6):946.
79. Levett PN, Walton D, Waterman LD, Whittington CU, Mathison GE, Everard CO, et al. Surveillance of leptospiral carriage by feral rats in Barbados. *The West Indian medical journal*. 1998;47(1):15-7.
80. Tsai CC, Raulston GL, Fresh JW. A team approach to a disease survey on an aboriginal island (Orchid Island, Taiwan). II. Leptospirosis in man and animals on Lan Yu. *CHINJMICROBIOL*. 1973;6(4):173-7.
81. Damude DF, Jones CJ, Myers DM. A study of leptospirosis among animals in Barbados W.I. *Transactions of the Royal Society of Tropical Medicine and Hygiene*. 1979;73(2):161-8.
82. Myers DM, Jones CJ. *Leptospira* Fort bragg isolated from a rat in Barbados. *Bulletin of the Pan American Health Organization*. 1975;9(3):208-11.
83. Dikken H, Timmer VE, Njenga R. Three new leptospiral serovars from Kenya. *Tropical and geographical medicine*. 1981;33(4):343-6.
84. Collares-Pereira M, Mathias ML, Santos-Reis M, Ramalhinho MG, Duarte-Rodrigues P. Rodents and *Leptospira* transmission risk in Terceira island (Azores). *European Journal of Epidemiology*. 2000;16(12):1151-7.
85. Collares-Pereira M, Korver H, Terpstra WJ, Santos-Reis M, Ramalhinho MG, Mathis ML, et al. First epidemiological data on pathogenic leptospire isolated on the Azorean islands. *European Journal of Epidemiology*. 1997;13(4):435-41.
86. Vanasco NB, Rossetti C, Sequeira G, Sequeira MD, Calderón G, Tarabla HD. First isolations of leptospire serogroup Ballum serovar Arborea in Argentina. *Veterinary Record*. 2000;147(9):246-7.

87. Collares-Pereira M, Korver H, Cao Thi BV, Santos-Reis M, Bellenger E, Baranton G, et al. Analysis of *Leptospira* isolates from mainland Portugal and the Azores islands. FEMS Microbiology Letters. 2000;185(2):181-7.
88. Lindenbaum I, Eylan E. Leptospirosis in *Rattus norvegicus* and *Rattus rattus* in Israel. Israel journal of medical sciences. 1982;18(2):271-5.
89. Slack AT, Symonds ML, Dohnt MF, Craig SB, Smythe LD. Short report: molecular epidemiology of *Leptospira borgpetersenii* serovar Arborea, Queensland, Australia, 1998-2005. American Journal of Tropical Medicine and Hygiene. 2010;83(4):820-1.
90. Santa Rosa CA, Sulzer CR, Giorgi W, da Silva AS, Yanaguita RM, Lobao AO. Leptospirosis in wildlife in Brazil: isolation of a new serotype in the Pyrogenes group. American journal of veterinary research. 1975;36(9):1363-5.
91. Clark LG, Kresse JL, Marshak RR, Hollister CJ. *Leptospira* Ballum infection in a shrew (*Blarina brevicauda brevicauda*). Amer Jour Trop Med and Hyg. 1962;11((5)):664-5.
92. Ris DR, Lake DE, Holland JTS. The isolation of *Leptospira* serotypes Copenhageni and Ballum from healthy calves. New Zealand Veterinary Journal. 1973;21(10):218-20.
93. Cole Jr JR, Sangster LT, Sulzer CR, Pursell AR, Ellinghausen HC. Infections with *Encephalitozoon cuniculi* and *Leptospira interrogans*, serovars Grippotyphosa and Ballum, in a kennel of Foxhounds. Journal of the American Veterinary Medical Association. 1982;180(4):435-7.
94. Ferris DH, et al. Research into the nidality of *Leptospira* Ballum in campestral hosts including the hog-nosed snake (*Heterodon platyrhinus*). Cornell Vet. 1961;51((3)):405-19.
95. McKeever S, Schubert JH, Gorman GW, Grimes RD. Comparison of bacteriological and serological techniques for detection of leptospirosis in wild mammals. Amer Jour Vet Res. 1959;20((74)):192-7.
96. Diesch SL, McCulloch WF, Braun JL, Davis JR. Detection and ecology of leptospirosis in Iowa wildlife. Journal of wildlife diseases. 1970;6(4):275-88.
97. Timoney JF, Kalimuthusamy N, Velineni S, Donahue JM, Artiushin SC, Fettingner M. A unique genotype of *Leptospira interrogans* serovar Pomona type kennewicki is associated with equine abortion. Veterinary Microbiology. 2011;150(3-4):349-53.
98. Yager RH, Gochenour WS, Alexander AD, Wetmore PW. Natural occurrence of *Leptospira* Ballum in rural house mice and in an opossum. Proc Soc Exptl Biol and Med. 1953;84((3)):589-90.
99. Van der Hoeden J. Leptospiral infections in hedgehogs. Jour Infect Dis. 1958;103((3)):225-38.
100. Blackmore DK, Hathaway SC. The nidality of zoonoses *Leptospira interrogans* serovar Ballum in rats, New Zealand. Proceedings of the Second International Symposium on Veterinary Epidemiology and Economics, held at Canberra, Australia, 7-11 May 1979 / sponsored by Australian Bureau of Animal Health ; edited by WA Geering et al 1980. p. 207-13.
101. Ferris DH, Andrews RD. Parameters of a natural focus of *Leptospira* Pomona in skunks and, opossums. Bull Wildlife Dis Ass. 1967;3((1)):2-10.
102. Roth EE, Adams WV, Sanford GE, Moore M, Newman KAY, Greer B. Leptospirosis in striped skunks. Publ Hlth Rept. 1963;78((11)):994-1000.
103. Roth EE, Adams WV, Sanford GE, Greer B, Newman KAY, Moore M, et al. The bacteriologic and serologic incidence of leptospirosis among striped skunks in Louisiana. Zoonoses Res. 1963;2((1)):13-39.

104. Roth EE, Moore M, Greer B, Newman KAY, Adams WV, Sanford GE. Identification of Hyos leptospiral strains isolated in Louisiana with report of a new serotype. *Zoonoses Res.* 1963;2((2)):91-104.
105. Clark LG, Kresse JI, Marshak RR, Hollister CJ. Natural occurrence of leptospirosis in the meadow vole, *Microtus pennsylvanicus*. *Amer Jour Vet Res.* 1961;22((90)):949-50.
106. Tomich PQ. Studies of leptospirosis in natural host populations 1. Small mammals of waipio valley island of Hawaii USA. *Pacific Science.* 1979;33(3):257-79.
107. Cordeiro F, Silva I. Identification of leptospire isolated from the mouse *Mus-musculus-brevirostris* in the state of Rio-de-Janeiro Brazil. *Revista de Microbiologia.* 1974;5(2):37-41.
108. Cordeiro F. *Leptospira* isolated from mice *Mus-musculus-brevirostris* in the state of Rio-de-Janeiro Brazil. *Pesquisa Agropecuaria Brasileira.* 1970;5:461-4.
109. Brown RZ, Gorman GW. The occurrence of leptospiral infections in feral rodents in Southwestern Georgia. *Amer Jour Publ Health.* 1960;50((5)):682-8.
110. Petersen CB. *Leptospira* Ballum. A new serological *Leptospira* type. *Acta Path Et Microbiol Scand.* 1944;21((3)):504-9.
111. Hathaway SC, Blackmore DK, Marshall RB. Leptospirosis in free-living species in New Zealand. *Journal of wildlife diseases.* 1981;17(4):489-96.
112. Gasca CAC, Ko AI, Ahmed N, De La Peña-Moctezuma A. Isolation and molecular characterization of *Leptospira borgpetersenii* serovar Ballum. *Tropical and Subtropical Agroecosystems.* 2013;16(2):143-53.
113. Brockie RE. Leptospirosis of rodents in the North Island. *New Zealand Veterinary Journal.* 1977;25(4):89-90, 5-6.
114. Van Der Hoeden J, Szenberg E. *Leptospira* infections in rats in Israel. *Trop Geogr Med.* 1965;16((4)):377-84.
115. Alexander AD, Benenson AS, Byrne RJ, Diaz-Rivera RS, Evans LB, Gochenour WS, et al. Leptospirosis in Puerto Rico. *Zoonoses Res.* 1963;2((3)):152-227.
116. Farina R, Babudieri B. Isolation of *Leptospira* Ballum from a rat. *Rend Ist Super Sanita.* 1957;20((9/10)):857-9.
117. Coveleda J, Pumarola A, Cantarell I. Leptospirosis por *L. ballum* en los trabajadores de arrozal de la region de Camarles (Delta del Ebro). *Rev Iberica Parasitol.* 1953;13((3)):289-98.
118. Hathaway SC, Blackmore DK. Ecological aspects of the epidemiology of infection with leptospire of the Ballum serogroup in the black rat (*Rattus rattus*) and the brown rat (*Rattus norvegicus*) in New Zealand. *The Journal of hygiene.* 1981;87(3):427-36.
119. Humphreys FA, Campbell AG, Smith ES. Studies on *Leptospira* infection in rodents and dogs in British Columbia. *Canadian Jour Comp Med and Vet Sci.* 1953;17((4)):206-12.
120. Evans LB, Wood GE, Flyger V, Alexander AD, Yager RH, Rubin HL. Natural occurrence of *Leptospira icterohaemorrhagiae* in an opossum 1962.
121. Cacchione RA, Cedro VCF, Bulgini MJD, Elli ESC, Martinez ES. Leptospirosis ovina. Investigation on its frequency in Argentina. Separation and classification of an ovine strain Engl. summ. *Rev Invest Ganad.* 1963;18:311-8.
122. Machang'u RS, Mgone GF, Assenga J, Mhamphi G, Weetjens B, Cox C, et al. Serological and molecular characterization of *Leptospira* serovar Kenya from captive African giant pouched rats (*Cricetomys gambianus*) from Morogoro Tanzania. *FEMS Immunology and Medical Microbiology.* 2004;41(2):117-21.

123. Myers DM, Caparo AC, Moreno JP. Isolation of serotype Hardjo and other leptospirae from armadillos in Argentina. Bulletin of the Pan American Health Organization. 1977;11(2):131-9.
124. Carillo CG, Meyers DM, Szyfres B. Bataviae group *Leptospirae* isolated from armadillos in Argentina. Tropical and geographical medicine. 1972;24(4):377-81.
125. Szyfres B, Sulzer CR, Galton MM. A new leptospiral serotype of the Bataviae group isolated in Argentina. Boletin de la Oficina Sanitaria Panamericana Pan American Sanitary Bureau. 1968;64(3):225-7.
126. Ivanov I. [*Arvicola terrestris*--*Leptospira* carrier in the rice fields]. Folia Med (Plovdiv). 1971;13(3):204-8.
127. Esseveld H, Collier WA. No English Title Available. Zeitschr Immunitatsforsch. 1938;93((5/6)):512-28.
128. Abdul Rahman A, Seng Fong L, Khairani-Bejo S, Khor KH, Ajat M, Radzi R, et al. First report of pathogenic *Leptospira* spp. isolated from urine and kidneys of naturally infected cats. PLoS One. 2020;15(3):e0230048.
129. Benacer D, Mohd Zain SN, Sim SZ, Mohd Khalid MKN, Galloway RL, Souris M, et al. Determination of *Leptospira borgpetersenii* serovar Javanica and *Leptospira interrogans* serovar Bataviae as the persistent *Leptospira* serovars circulating in the urban rat populations in Peninsular Malaysia. Parasites and Vectors. 2016;9(1).
130. Benacer D, Zain SNM, Ahmed AA, Khalid MKNM, Hartskeerl RA, Thong KL. Predominance of the ST143 and ST50 *Leptospira* clones in the urban rat populations of Peninsular Malaysia. Journal of Medical Microbiology. 2016;65(Part 6):574-7.
131. Kitaoka M, Mo DH, Mori M. Identification of *Leptospira* strains isolated from rats in Saigon as *Leptospira*-Bataviae or its subserotype. International Journal of Zoonoses. 1977;4(1):45-7.
132. Benacer D, Mohd Zain SN, Amran F, Galloway RL, Thong KL. Isolation and molecular characterization of *Leptospira interrogans* and *Leptospira borgpetersenii* isolates from the urban rat populations of Kuala Lumpur, Malaysia. The American journal of tropical medicine and hygiene. 2013;88(4):704-9.
133. Aragon PR, Jacalne AV, Famatiga EG. Isolation of *Leptospira* from rats, dogs and pigs. Philippine J Sci. 1965;94((1)):45-54.
134. Heisey GB, Nimmannitya S, Karnchanachetane C. Epidemiology and characterization of leptospirosis at an urban and provincial site in Thailand. Southeast Asian Journal of Tropical Medicine and Public Health. 1988;19(2):317-22.
135. Liceras de Hidalgo J. Leptospirosis in San Martin, Peru. Boletin de la Oficina Sanitaria Panamericana Pan American Sanitary Bureau. 1975;79(5):410-21.
136. Rosa CAS, Sulzer CR, Pestana De Castro AF. A new leptospiral serotype in the Bataviae group isolated in Sao-Paulo Brazil. American Journal of Veterinary Research. 1972;33(8):1719-21.
137. Gale NB, Alexander AD, Evans LB, Yager RH, Matheney RG. An outbreak of leptospirosis among U S Army troops in the Canal Zone. II. Isolation and characterization of the isolates. Amer J Trop Med Hyg. 1966;15((1)):64-70.
138. Liceras de Hidalgo J, Hidalgo R R, Flores G M. Leptospirosis in man, cattle, swine, goats and dogs in Tingo Maria, Huanuco department, Peru, in 1974-75. Boletin de la Oficina Sanitaria Panamericana. 1981;50(5):430-40.

139. Villanueva SYAM, Ezoë H, Baterna RA, Yanagihara Y, Muto M, Koizumi N, et al. Serologic and molecular studies of *Leptospira* and leptospirosis among rats in the Philippines. *American Journal of Tropical Medicine and Hygiene*. 2010;82(5):889-98.
140. Villanueva SYAM, Saito M, Baterna RA, Estrada CAM, Rivera AKB, Dato MC, et al. *Leptospira*-rat-human relationship in Luzon, Philippines. *Microbes and Infection*. 2014;16(11):902-10.
141. Feresu SB, Bolin CA, Van De Kemp H, Korver H. Identification of a serogroup Bataviae *Leptospira* strain isolated from an ox in Zimbabwe. *Zentralblatt für Bakteriologie*. 1999;289(1):19-29.
142. Kurilung A, Keeratipusana C, Suriyaphol P, Hampson DJ, Prapasarakul N. Genomic analysis of *Leptospira interrogans* serovar Paidjan and Dadas isolates from carrier dogs and comparative genomic analysis to detect genes under positive selection. *BMC Genomics*. 2019;20.
143. Szyfres B, Blood BD. *Leptospira* Paidjan isolated from opossums in Argentina. *Trop Geogr Med*. 1964;16((3)):263-4.
144. Roth EEWVA, Sanford GE, Greer B, Mayeux P. *Leptospira* Paidjan (Bataviae serogroup) isolated from nutria in Louisiana. *Publ Health Repts*. 1962;77((7)):583-7.
145. Liceras de Hidalgo JL, Sulzer KR. Six new leptospiral serovars isolated from wild animals in Peru. *Journal of clinical microbiology*. 1984;19(6):944-5.
146. Cacchione RA, Cascelli ES, Martinez ES, Zuberbuhler JM. Leptospirosis in wild animals. The isolation of a strain of *L. Canicola* from a peludo. (*Chaetophractus villosus*) Engl. sum. *Rev Invest Agropecuar Ser 4 Patol Anim*. 1966;3((5)):51-5.
147. Roberts CS, Turner LW, Livingston JH. Bovine leptospirosis in Alabama - A five-year study. *Jour Amer Vet Med Assoc*. 1961;139((8)):877-83.
148. Cacchione RA, Cedro VCF, Bulgini MJD, Martinez ES, Cascelli ES. Isolation and classification of bovine leptospirosis strains from cattle in Argentina English summ. *Rev Invest Granaderas*. 1961;11:41-50.
149. Turner LW, Roberts CS, Wiggins AM, Alexander AD, Murphy LC. *Leptospira* Canicola infection in a newborn calf. *Amer Jour Vet Res*. 1958;19((73)):780-4.
150. Zacarias FG, Vasconcellos SA, Anzai EK, Giraldo N, de Freitas JC, Hartskeerl R. Isolation of *Leptospira* serovars Canicola and Copenhageni from cattle urine in the state of Paraná, Brazil. *Braz J Microbiol*. 2008;39(4):744-8.
151. Noubade R, Shivaraj MB, Venkatesha MD, Krishnamurthy GV, Krishnappa G. Isolation of *Leptospira* canicola from dogs. *Indian Journal of Animal Sciences*. 2002;72(3):240-1.
152. Venkataraman KS, Nedunchellian S, Ramkrishna J, Ramadass P, Raghavan N. Isolation of Canicola leptospiral serovar from urine of a dog. *Indian Veterinary Journal*. 1992;69(9):866-.
153. Yasuda PH, Santa Rosa CA. The correlation between the microscopic agglutination test and the isolation of leptospirae in dogs. *Revista de Microbiologia*. 1981;12(2):35-7.
154. Tsai CC, Fresh JW. *Leptospira*-Canicola isolated from dogs in Taiwan. *Journal of the Formosan Medical Association*. 1969;68(1):58-62.
155. Joseph KM, Kalra SL. Leptospirosis in India. *Indian J Med Res*. 1966;54((7)):611-4.
156. Hubbert WT, Shotts EB. Leptospirosis in kennel dogs. *J Amer Veterinary Med Ass*. 1966;148((10)):1152-9.
157. Yamamoto S, Fujiwara K, Ito S. Studies on distribution of leptospirae among dogs in Hokkaido. *Japan Jour Vet Sci*. 1963;25((1)):1-3.

158. White FH, Stoliker HE, Galton MM. Detection of leptospire in naturally infected dogs using fluorescein-labeled antibody. *Amer Jour Vet Res.* 1961;22((89)):650-4.
159. Soloshenko IZ, Khorava GV. *Leptospira* carriers among dogs in the littoral zone of the Abkhazian A.S.S.R. *Zhur Mikrobiol Epidemiol I Immunobiol [Transl].* 1960;31((7)):1365-7.
160. Babudieri B, D'Amore A. *Leptospira* Canicola infection in a training school for dogs. *Rend Ist Super Sanita.* 1958;21((7/8)):692-7.
161. Ianovich TD, Bliznichenko AG, Zaburina LV, Mstibovsioi SA, Berkovich AI, Dushevin IP. Leptospirosis of the canicola type in one of the districts of Rostov-on-the-Don. *Jour Microbiol Epidemiol and Immunobiol [Translation].* 1957:259-64.
162. Ward MK, McDaniel MB, Tatum HW, Starr LE, Williams HR. An epidemic of canicola fever in man with the demonstration of *Leptospira* Canicola infection in dogs, swine and cattle. II. Laboratory studies. *Amer Jour Hyg.* 1956;64((1)):59-69.
163. Wolff JW, Loman S, Wielenga-Bergman AB. *Leptospira* Canicola in Indonesia. *Documenta Neerland Et Indones Morbis Trop.* 1951;3((2)):187-8.
164. Savino E, Rennella E. Studies in *Leptospira*. III. *Lepto-spira* in dogs of Buenos Aires. *Rev Soc Argentina Biol.* 1943;19((4)):348-58.
165. Meyer KF, Stewart-Anderson B, Eddie B. Canine leptospirosis in the United States. *Jour Amer Vet Med Assoc.* 1939;95((753)):710-29.
166. Walch-Sorgdrager B, Schuffner W. Die Selbständigkeit der *L. canicola*. *Zentralbl Bakt I Abt Orig.* 1938;141((3/4)):97-109.
167. Klarenbeek A. Klinische Statistik der Lepto-spirosen des Hundes. *Zentralbl Bakt I Abt Orig.* 1938;142((1/2)):83-6.
168. Everard CO, Cazabon EP, Dreesen DW, Sulzer CR. Leptospirosis in dogs and cats on the Island of Trinidad: West Indies. *International journal of zoonoses.* 1979;6(1):33-40.
169. Beyers CP. Serological and cultural evidence of *Leptospirae* in Cape Town dogs. *South African medical journal = Suid-Afrikaanse tydskrif vir geneeskunde.* 1965;39(35):797-8.
170. Zardi O, Giorgi G. Epidemiological studies on leptospirosis. Isolation and study of serotypes from dogs in the province of Parma. *Nuovi annali d'igiene e microbiologia.* 1964;15(6):511-6.
171. Schüffner W. Recent work on leptospirosis. *Transactions of the Royal Society of Tropical Medicine and Hygiene.* 1934;28(1):7-12,IN4,3-22,IN5,3-31.
172. Moreno LZ, Miraglia F, Lilenbaum W, Neto JSF, Freitas JC, Morais ZM, et al. Profiling of *Leptospira interrogans*, *L. santarosai*, *L. meyeri* and *L. borgpetersenii* by SE-AFLP, PFGE and susceptibility testing—a continuous attempt at species and serovar differentiation. *Emerging Microbes & Infections.* 2016;5:e17.
173. Benacer D, Thong KL, Ooi PT, Souris M, Lewis JW, Ahmed AA, et al. Serological and molecular identification of *Leptospira* spp. In swine and stray dogs from Malaysia. *Tropical Biomedicine.* 2017;34(1):89-97.
174. Clark LG, Varela-Diaz VM, Sulzer CR, Marshak RR, Hollister CJ. Leptospirosis in Nicaragua: Preliminary report on the first year of study. *Amer J Trop Med Hyg.* 1966;15((5)):735-42.
175. Roth EE, Adams WV, Linder D. Isolation of *Leptospira* Canicola from skunks in Louisiana. *Publ Health Repts.* 1961;76((4)):335-40.
176. Pereira MM, Andrade J. Epidemiological aspects of leptospirosis in a slum area in the city of Rio de Janeiro, Brazil. Search for leptospire and specific antibodies in rodents. *Transactions of the Royal Society of Tropical Medicine and Hygiene.* 1988;82(5):768-70.

177. Santa Rosa CA, Sulzer CR, Yanaguita RM, Da Silva AS. Leptospirosis in wildlife in Brazil: isolation of serovars Canicola, Pyrogenes and Grippotyphosa. *International journal of zoonoses*. 1980;7(1):40-3.
178. Felt SA, Wasfy MO, El-Tras WF, Samir A, Rahaman BA, Boshra M, et al. Cross-species surveillance of *Leptospira* in domestic and pen-domestic animals in Mahalla City, Gharbeya Governorate, Egypt. *American Journal of Tropical Medicine and Hygiene*. 2011;84(3):420-5.
179. Paz-Soldan SV, Dianderas MT, Windsor RS. *Leptospira-interrogans* serovar Canicola a causal agent of sow abortions in Arequipa Peru. *Tropical Animal Health and Production*. 1991;23(4):233-40.
180. Cinco M, Nityananda K. Classification of 8 new strains of *Leptospira* isolated in Ceylon. *Zentralblatt fuer Bakteriologie Parasitenkunde Infektionskrankheiten und Hygiene Erste Abteilung Originale Reihe A Medizinische Mikrobiologie und Parasitologie*. 1975;231(1-3):365-8.
181. Van Rensburg WJJ. Isolation of *Leptospira* Canicola from pigs and dogs in South Africa. *JSAFRVETMEDASS*. 1973;44(4):435-6.
182. Tedesco LF, Manrique G, Sulzer CR. A new leptospiral serotype in the Canicola serogroup from Argentina. *Tropical and Geographical Medicine*. 1969;21(2):203-6.
183. Rahelinirina S, Leon A, Harstskeerl RA, Sertour N, Ahmed A, Raharimanana C, et al. First isolation and direct evidence for the existence of large small-mammal Reservoirs of *Leptospira* sp in Madagascar. *PLoS One*. 2010;5(11):e14111-Article No.: e.
184. Rossetti CA, Liem M, Samartino LE, Hartskeerl RA. Buenos Aires, a new *Leptospira* serovar of serogroup Djasiman, isolated from an aborted dog fetus in Argentina. *Veterinary Microbiology*. 2005;107(3-4):241-8.
185. Fazli SA. Isolation of *Leptospira*-Djasiman from citellus. *Mikrobiyoloji Bulteni*. 1972;6(2):183-5.
186. Herrmann JL, Bakoss P, Korver H, Bulu AA, Bellenger E, Terpstra WJ, et al. A new serovar in the Grippotyphosa serogroup comprising leptospiral isolates from different regions. *International journal of systematic bacteriology*. 1994;44(2):362-4.
187. Jarekova J, Bakoss P, Lysy J. Influence of rodenticide on natural focus of field fever: Preliminary report. *Biologia (Bratislava)*. 1993;48(3):279-81.
188. Abdollahpour G, English AW, Tasler J. Isolation of *Leptospira interrogans* serovar Grippotyphosa from a heifer in New South Wales. *Australian Veterinary Journal*. 1996;73(3):109-10.
189. Miller DA, Wilson MA, Beran GW. Survey to estimate prevalence of *Leptospira-interrogans* infection in mature cattle in the United States. *American Journal of Veterinary Research*. 1991;52(11):1761-5.
190. Maghami G. A brief report on the survey of leptospirosis in Iran. *Archives de l'Institut Razi*. 1970(22):203-7.
191. Bakoss P, Chadli A. Isolation in Tunisia of a new strain of *Leptospira* Grippotyphosa. *Arch Inst Pasteur Tunis*. 1965;42((1)):67-70.
192. Thiermann AB. Bovine leptospirosis: bacteriologic versus serologic diagnosis of cows at slaughter. *American journal of veterinary research*. 1983;44(12):2244-5.
193. Diesch SL, McCulloch WF, Crawford RP, Bennett PC, Braun JL. Epidemiologic studies of *Leptospira* Grippotyphosa and *Leptospira* Hardjo infections in Iowa cattle. *Proceedings, annual meeting of the United States Animal Health Association*. 1967;71:195-205.
194. van der Hoeden J. Leptospirosis among goats in Israel. *Jour Comp Path and Therap*. 1953;63((2)):101-11.



195. Krepkogorskaia TA, Rementsova MM. The isolation of strains of leptospire from the tick *Dermacentor marginatus* S. from cattle. Jour Microbiol Epidemiol and Immunobiol [Translation]. 1957;28((2)):251-2.
196. Brem S, Gerhards H, Wollanke B, Meyer P, Kopp H. Intraocular *Leptospira* isolation in 4 horses suffering from equine recurrent uveitis (ERU). Berliner und Munchener Tierarztliche Wochenschrift. 1998;111(11-12):415-7.
197. Masuzawa T, Okamoto Y, Une Y, Takeuchi T, Tsukagoshi K, Koizumi N, et al. Leptospirosis in squirrels imported from United States to Japan. Emerging Infectious Diseases. 2006;12(7):1153-5.
198. Ana'Nn VV, Karaseva EV, Semenova LP, Chernukha IG. Natural foci of leptospirosis in the Altai territory. Zhur Mikrobiol Epidemiol I Immunobiol [Transl]. 1959;30((3)):74-81.
199. Parnas J, Koslak A, Zwolski W, Szczesniak N, Cybulska M. A natural focus of leptospirosis in the Karpaten mountains English and Frence summ. Arch Hyg U Bakteriol. 1962;146((3)):211-20.
200. Kuiken T, van Dijk JE, Terpstra WJ, Bokhout BA. The role of the common vole (*Microtus arvalis*) in the epidemiology of bovine infection with *Leptospira interrogans* serovar hardjo. Veterinary microbiology. 1991;28(4):353-61.
201. Gorelova NB, Bellenger E, Postic D, Kovalevskii YV. Spontaneous mixed infection of a rodent with *Borrelia* and *Leptospira*. Meditsinskaya Parazitologiya i Parazitarnye Bolezni. 1996;0(4):53-.
202. Clark LG, Kresse JI, Marshak R, Hollister CJ. *Leptospira* Grippotyphosa infections in cattle and wildlife in Pennsylvania. Journal of the American Veterinary Medical Association. 1962;141:710-2.
203. Maghami GH, Hooshmand-rad P, Farhang-azad A. Leptospirosis in small mammals of Iran: II: isolation of *Leptospira* Grippotyphosa from *Mus musculus*. Journal of wildlife diseases. 1977;13(3):286-9.
204. Barsoum IS, Moch RW, Botros BAM, Kaiser MN. Leptospire isolated from wild mammals in Egypt. Tropical and Geographical Medicine. 1973;25(4):362-4.
205. Lataste-Dorolle C, Fiocre B. Muskrats, Ondatra (*Fiber zibethicus*, Linnaeus), carriers in France of various leptospirian serotypes: isolation of the 1st French strain related to the Hebdomadis serogroup. Bulletin de la Societe de pathologie exotique et de ses filiales. 1969;62(2):312-20.
206. Rafyi A, Maghami G. The frequency of leptospirosis in Iran. III. Isolation of *L. grippotyphosa* (= *L. bovis*) in sheep. Bull Soc Pathol Exot. 1961;54((2)):179-81.
207. Leon-Vizcaino L, Hermoso de Mendoza M, Garrido F. Incidence of abortions caused by leptospirosis in sheep and goats in Spain. Comparative immunology, microbiology and infectious diseases. 1987;10(2):149-53.
208. Fraser DW, Glosser JW, Francis DP, Phillips CJ, Feeley JC, Sulzer CR. Leptospirosis caused by serotype Fort bragg: a suburban outbreak. Annals of Internal Medicine. 1973;79(6):786-9.
209. Hanson LE, Reynolds HA, Evans LB. Leptospirosis in swine caused by serotype Grippotyphosa. American journal of veterinary research. 1971;32(6):855-60.
210. Shotts Jr EB, Andrews CL, Sulzer C, Greene E. Leptospirosis in cottontail and swamp rabbits of the Mississippi Delta. Journal of wildlife diseases. 1971;7(2):115-7.
211. Ball MG. Animal hosts of leptospire in Kenya and Uganda. Amer J Trop Med Hyg. 1966;15((4)):523-30.

212. Matthias MA, Diaz MM, Campos KJ, Calderon M, Willig MR, Pacheco V, et al. Diversity of bat-associated *Leptospira* in the Peruvian Amazon inferred by Bayesian phylogenetic analysis of 16S ribosomal DNA sequences. *American Journal of Tropical Medicine and Hygiene*. 2005;73(5):964-74.
213. Kmety E, Gurycova D, Jarekova J, Rehacek J. An attempt to control a natural focus of tularemia and leptospirosis. *Zentralblatt fuer Bakteriologie Mikrobiologie und Hygiene Series A*. 1987;266(1-2):249-54.
214. Feresu SB, Bolin CA, Korver H, Van de Kemp H. Identification of leptospires of the Pomona and Grippotyphosa serogroups isolated from cattle in Zimbabwe. *Research in veterinary science*. 1995;59(1):92-4.
215. Sharma S, Vijayachari P, Sugunan AP, Sehgal SC. Leptospiral carrier state and seroprevalence among animal population - a cross-sectional sample survey in Andaman and Nicobar Islands. *Epidemiology and Infection*. 2003;131(2):985-9.
216. van den Hoeden J, Shenberg E, Torten M. A new leptospiral serotype belonging to the serogroup Grippotyphosa. *The Journal of tropical medicine and hygiene*. 1969;72(7):176-8.
217. Rivera P, Ticlla M, Balda L, Gonzalez D, Cespedes M. Genetic diversity of Peruvian isolates of *Leptospira* spp. through pulsed field gel electrophoresis. *Revista peruana de medicina experimental y salud publica*. 2012;29(4):469-76.
218. Santa Rosa CA, Sulzer CR, Pestana De Castro AF, Yanaguita RM, Giorgi W. 2 new leptospiral serovars in the Hebdomadis group isolated from cattle in Brazil. *International Journal of Zoonoses*. 1980;7(2):158-63.
219. Liceras de Hidalgo J, Mejia D E. Leptospirosis in man, swine and rats, Iquitos, Loreto department, Peru, 1974. *Boletin de la Oficina Sanitaria Panamericana*. 1981;50(2):152-9.
220. Bercovici C, Straton C, Straton A, Tadulescu P, Brevenel G. Study of the natural *Leptospira* focus in the lower basin of the pruth river. *Journal of Hygiene Epidemiology Microbiology and Immunology (Prague)*. 1972;16(3):303-13.
221. Hooshmand-Rad P, Maghami G. Leptospirosis in small mammals of Iran: I. Serologic tests and isolation of *Leptospira* Hebdomadis from *Apodemus sylvaticus*. *Journal of wildlife diseases*. 1976;12(1):34-8.
222. Nicolescu M, Alămiță E, Borșai L. Serotype identification of *Leptospira* strains isolated in Romania. II. Strains belonging to the Hebdomadis serogroup. *Archives Roumaines de Pathologie Experimentale et de Microbiologie*. 1971;30(1):59-64.
223. Koizumi N, Uchida M, Makino T, Taguri T, Kuroki T, Muto M, et al. Isolation and characterization of *Leptospira* spp. from raccoons in Japan. *Journal of Veterinary Medical Science*. 2009;71(4):425-9.
224. Nicolescu M, Straton A, Alamita I. Unusual and new *Leptospira* Hebdomadis serotypes isolated from wild small rodents in Romania. *Archives roumaines de pathologie experimentales et de microbiologie*. 1976;35(3):203-11.
225. Yanagawa R, Takashima I. *Leptospira* serotype Kremastos of bovine origin. *Japanese journal of microbiology*. 1972;16(2):147-8.
226. Feresu SB, Korver H, Riquelme N, Baranton G, Bolin CA. Two new leptospiral serovars in the Hebdomadis serogroup isolated from Zimbabwe cattle. *International Journal of Systematic Bacteriology*. 1996;46(3):694-8.
227. Tsai CC, Fresh JW. Leptospires in the Hebdomadis and Pomona serogroups from mongooses in Tqiwan. *Tropical and geographical medicine*. 1971;23(2):201-3.

228. Perolat P, Chappel RJ, Adler B, Baranton G, Bulach DM, Billingham ML, et al. *Leptospira fainei* sp. nov., isolated from pigs in Australia. International Journal of Systematic Bacteriology. 1998;48(3 PART 4):851-8.
229. Bourhy P, Storck CH, Theodose R, Olive C, Nicolas M, Hochedez P, et al. Serovar diversity of pathogenic *Leptospira* Circulating in the French West Indies. PloS Neglected Tropical Diseases. 2013;7(3):e2114-Article No.: e.
230. Miraglia F, Matsuo M, Morais ZM, Dellagostin OA, Seixas FK, Freitas JC, et al. Molecular characterization, serotyping, and antibiotic susceptibility profile of *Leptospira interrogans* serovar Copenhageni isolates from Brazil. Diagnostic Microbiology and Infectious Disease. 2013;77(3):195-9.
231. Miraglia F, de Morais ZM, Dellagostin OA, Seixas FK, Freitas JC, Zacarias FG, et al. Molecular and serological characterization of *Leptospira interrogans* serovar Canicola isolated from dogs, swine, and bovine in Brazil. Trop Anim Health Prod. 2013;45(1):117-21.
232. Cordeiro F, Sulzer CR. *Leptospira-interrogans* serovar Copenhageni isolated from a dog in belo-horizonte Brazil. Revista de Microbiologia. 1983;14(1):38-41.
233. Suepaul SM, Carrington CV, Campbell M, Borde G, Adesiyun AA. Serovars of *Leptospira* isolated from dogs and rodents. Epidemiol Infect. 2010;138(7):1059-70.
234. Paz LN, Dias CS, Almeida DS, Balassiano IT, Medeiros MA, Costa F, et al. Multidisciplinary approach in the diagnosis of acute leptospirosis in dogs naturally infected by *Leptospira interrogans* serogroup Icterohaemorrhagiae: A prospective study. Comp Immunol Microbiol Infect Dis. 2021;77:101664.
235. Peláez Sanchez RG, Lopez JÁ, Pereira MM, Naranjo MA, Agudelo-F Lórez P. Genetic diversity of *Leptospira* in northwestern Colombia: First report of *Leptospira santarosai* as a recognised leptospirosis agent. Memorias do Instituto Oswaldo Cruz. 2016;111(12):737-44.
236. Kik MJ, Goris MG, Bos JH, Hartskeerl RA, Dorrestein GM. An outbreak of leptospirosis in seals (*Phoca vitulina*) in captivity. Vet Q. 2006;28(1):33-9.
237. Kobayashi Y, Tamai T, Oyama T, Hasegawa H, Sada E, Kusaba T, et al. Characterization of mono clonal antibodies against etiological agents of Weils disease. Microbiology and Immunology. 1984;28(3):359-70.
238. Masedo Agirre S, Chernukha IG. Classification of *Leptospira* isolated in Peru. Zhurnal mikrobiologii, epidemiologii, i immunobiologii. 1979(2):77-81.
239. de Faria MT, Calderwood MS, Athanzio DA, McBride AJ, Hartskeerl RA, Pereira MM, et al. Carriage of *Leptospira interrogans* among domestic rats from an urban setting highly endemic for leptospirosis in Brazil. Acta Trop. 2008;108(1):1-5.
240. Chernukha lu G, Anan'ina lu V. [Etiological structure of icterohemorrhagic leptospirosis in gray rats (*Rattus norvegicus*)]. Zh Mikrobiol Epidemiol Immunobiol. 1983(6):24-6.
241. Sulzer CR, Harvey TW, Galton MM. Comparison of diagnostic technics for the detection of leptospirosis in rats. Health Lab Sci. 1968;5(3):171-3.
242. Ruppner R, Behymer DE, Franti CE, Riemann HP, Cirone SM. Evaluation of the hemagglutination test for epidemiologic studies of leptospiral antibodies in wild mammals. Journal of Wildlife Diseases. 1978;14(2):193-202.
243. Brem S, Radu O, Bauer T, Schönberg A, Reissbauer K, Waidmann R, et al. *Leptospira* infected rat population as probable cause of a case of fatal Weil's disease. Berliner und Münchener Tierärztliche Wochenschrift. 1995;108(11):405-7.

244. Chernukha YG, Boroznov NI, Anan'ina YV. Populations of pathogenic leptospire with different virulence in nature. Zhurnal Mikrobiologii, Epidemiologii i Immunobiologii. 1988(8):13-6.
245. Perolat P, Poingt JP, Vie JC, Jouaneau C, Baranton G, Gysin J. Occurrence of severe leptospirosis in a breeding colony of squirrel monkeys. American Journal of Tropical Medicine and Hygiene. 1992;46(5):538-45.
246. Nicolescu M. Serovar determination of Romanian *L. icterohaemorrhagiae* strains. Archives roumaines de pathologie experimentales et de microbiologie. 1980;39(3):213-9.
247. Oh HB, Chang WH, Cho MK, Seong WK, Park KS. Identification of new serovar Yeonchon and Hongchon belonging to *Leptospira-interrogans* Icterohaemorrhagiae serogroup. Journal of the Korean Society for Microbiology. 1991;26(3):253-62.
248. Schnurrenberger PR, Hanson LE, Martin RJ. Leptospirosis long-term surveillance on an Illinois farm. American Journal of Epidemiology. 1970;92(4):223-39.
249. Santa Rosa CA, de Castro AFP, Troise C. Isolation of *L. icterohaemorrhagiae* from bovine fetus in the state of Sao Paulo, Brazil English summ. Arq Inst Biol [Sao Paulo]. 1961;28:113-8.
250. Ellis WA, O'Brien JJ, Neill SD, Ferguson HW, Hanna J. Bovine leptospirosis: microbiological and serological findings in aborted fetuses. The Veterinary record. 1982;110(7):147-50.
251. Sameer S, Vijayachari P, Sugunan AP, Subarna R, Kalimuthusamy N. Seroprevalence and carrier status for leptospirosis in cattle and goats in Andaman Island, India. Journal of Veterinary Science and Technology. 2014;5(5):205.
252. Feigin RD, Lobes LA, Jr., Anderson D, Pickering L. Human leptospirosis from immunized dogs. Annals of Internal Medicine. 1973;79(6):777-85.
253. Carbrey EA, Clark LG, Kresse JI. *Leptospira* Icterohaemorrhagiae subserotype incompleta isolated from wildlife in Pennsylvania. Publ Health Rept. 1963;78((4)):355-8.
254. Michel V, Ruvoen-Clouet N, Menard A, Sonrier C, Fillonneau C, Rakotovo F, et al. Role of the coypu (*Myocastor coypus*) in the epidemiology of leptospirosis in domestic animals and humans in France. European Journal of Epidemiology. 2001;17(2):111-21.
255. Matthias MA, Diaz MM, Campos KJ, Estrada CH, Ricaldi JN, Willig MR, et al. Three novel leptospire isolated from wild animals in the Peruvian Amazon region of Iquitos. American Journal of Tropical Medicine and Hygiene. 2003;69(3):415-6.
256. McKiel JA, Rappay DE, Cousineau JG, Hall RR, McKenna HE. Domestic rats as carriers of *Leptospire*s and *Salmonellae* in eastern Canada. Canadian Journal of Public Health. 1970;61(4):336-40.
257. Chadli A, Bakoss P. Inquiry concerning leptospirosis in Tunisia. Arch Inst Pasteur Tunis. 1965;42((1)):45-58.
258. Rademan J, Steytler JG, Wright N. First isolations of *Leptospirae* in Cape Town. S African Med J. 1964;38((30)):694-6.
259. Mailloux M. Microbiological investigation of the rats of Algiers. I. The presence of *Leptospira icterohaemorrhagiae*. Arch Inst Pasteur Algerie. 1962;40((2/3)):196-200.
260. Lazuga K, Bonnefous S. Contribution to the study of leptospirosis in rats in the city of Tunis English and German summ. Arch Inst Pasteur Tunis. 1962;39((1)):49-63.
261. McKiel JA, Cousineau JG, Hall RR. Leptospirosis in wild animals in eastern Canada with particular attention to the disease in rats. Canadian Jour Comp Med and Vet Sci. 1961;25((1)):15-8.

262. Bohl EH, Ferguson LC. Leptospirosis in domestic animals. Jour Amer Vet Med Assoc. 1952;121((909)):421-9.
263. Pumarola Busquets A, Berenguer JG. Estudio epidemiológico y microbiológico de la leptospirosis murina en Barcelona. Rev Iberica Parasitol. 1950;10((3)):201-336.
264. Savino E, Rennella E. Studies of Leptospiras. II. *Leptospira bonariensis* (n.sp.?) isolated from the gray rats of Buenos Aires. Rev Inst Bact Dr Carlos G Malbran". 1944;12((2)):182-9.
265. Mason WNM. The incidence of leptospiral infection in rats in Liverpool. Jour Path and Bact. 1938;46((3)):631-4.
266. Al Saadi M, Podt G. Rodent leptospirosis in Colorado. Journal of wildlife diseases. 1976;12(3):315-7.
267. Duchassin M, Lataste-Dorolle C, Silverie CR. Incidence of infection caused by *L. icterohaemorrhagiae* in rats in Cayenne. Some epidemiologic aspects of leptospirosis in French Guiana. Bulletin de la Societe de pathologie exotique et de ses filiales. 1965;58(2):170-6.
268. Morales GA, Guzmán VH, Beltrán LE. Leptospirosis in Colombia: Isolation of *Leptospira* spp. from the kidneys of brown rats (*Rattus Norvegicus*) trapped on infected piggeries. Tropical Animal Health and Production. 1978;10(1):121-3.
269. Romero-Vivas CME, Cuello-Pérez M, Agudelo-Flórez P, Thiry D, Levett PN, Falconar AKI. Cross-sectional study of *Leptospira* seroprevalence in humans, rats, mice, and dogs in a main tropical sea-port city. American Journal of Tropical Medicine and Hygiene. 2013;88(1):178-83.
270. Romero-Vivas CM, Thiry D, Rodríguez V, Calderón A, Arrieta G, Máttar S, et al. Molecular serovar characterization of *Leptospira* isolates from animals and water in Colombia. Biomedica. 2013;33(SUPPL.1):179-84.
271. Langworthy V, Moore AC. A study of *Leptospira icterohaemor-rhagiae*. Jour Infect Dis. 1927;41((1)):70-91.
272. Matthias MA, Ricaldi JN, Cespedes M, Diaz MM, Galloway RL, Saito M, et al. Human leptospirosis caused by a new, antigenically unique *Leptospira* associated with a *Rattus* species reservoir in the Peruvian Amazon. PLoS neglected tropical diseases. 2008;2(4):e213.
273. Santa Rosa CA, Giorgi W, Da Silva AS, Teruya JM. Abortion in swine isolation of *Leptospira-icterohaemorrhagiae* and *Brucella-suis* biotype 1. Arquivos do Instituto Biologico Sao Paulo. 1970;37(1):9-13.
274. Nisbet DI. *Leptospira icterohaemorrhagiae* infection in pigs. Jour Comp Path and Therap. 1951;61((2)):155-60.
275. Reddy GV, Rao AS, Reddy BD, Sarma BJR. Isolation of leptospires from porcine population in Andhra Pradesh. Indian Veterinary Journal. 1987;64(1):7-10.
276. Cho M-K, Kee S-H, Kim Y-J, Kim Y-W, Song H-J, Song K-J, et al. Prevalence of *Leptospira interrogans* in wild rodents in Korea. Journal of the Korean Society for Microbiology. 1999;34(6):591-4.
277. Cho MK, Kee SH, Song HJ, Kim KH, Song KJ, Baek LJ, et al. Infection rate of *Leptospira interrogans* in the field rodent, *Apodemus agrarius*, in Korea. Epidemiology and Infection. 1998;121(3):685-90.
278. Cho M-K, Kee S-H, Kim H-J, Kim Y-W, Oh H-B, Chang W-H. Serovar identification and genetic characterization of *Leptospira* isolates by arbitrarily primed PCR and ribotyping. Journal of the Korean Society for Microbiology. 1999;34(4):409-21.

279. Li SJ, Zhang CC, Li XW, Tian KC, Tang GP, Wang DM, et al. Molecular typing of *Leptospira interrogans* strains isolated from *Rattus tanezumi* in Guizhou Province, Southwest of China. *Biomedical and environmental sciences* : BES. 2012;25(5):542-8.
280. Mgode GF, Machang'u RS, Goris MG, Engelbert M, Sondij S, Hartskeerl RA. New *Leptospira* serovar Sokoine of serogroup Icterohaemorrhagiae from cattle in Tanzania. *International Journal of Systematic and Evolutionary Microbiology*. 2006;56(Part 3):593-7.
281. Feresu SB, Bolin CA, Korver H. A new leptospiral serovar in the Icterohaemorrhagiae serogroup isolated from an ox in Zimbabwe. *International Journal of Systematic Bacteriology*. 1993;43(1):179-82.
282. Nityananda K, Sulzer CR. A new leptospiral serotype in the Javanica serogroup from Ceylon. *Tropical and Geographical Medicine*. 1969;21(2):207-9.
283. Srivastava SK, Verma R, Krover H, Baranton G, Hartskeerl RA. Molecular and immunological characterisation of a *Leptospira* strain isolated from kidney of rats (*Rattus rattus*) in India. *Indian Journal of Animal Sciences*. 2002;72(8):631-4.
284. Srivastava SK, Sharma MC, Charan K. Pathogenicity of a new *Leptospira interrogans* serovar belonging to serogroup Javanica in goats. *Indian Veterinary Medical Journal*. 1998;22(4):311-4.
285. Natarajaseenivasan K, Ratnam S. Recent *Leptospira* isolates from Tamil Nadu. *Indian Journal of Animal Sciences*. 2000;70(6):551-5.
286. Natarajaseenivasan K, Ratnam S. An investigation of leptospirosis in a laboratory animal house. *Journal of Communicable Diseases*. 1996;28(3):153-7.
287. Natarajaseenivasan K, Ratnam S. Isolation of *Leptospira Javanica* from sheep. *Indian Journal of Animal Sciences*. 1999;69(10):759-61.
288. Natarajaseenivasan K, Vedhagiri K, Sivabalan V, Prabakaran SG, Sukumar S, Artiushin SC, et al. Seroprevalence of *Leptospira borgpetersenii* serovar Javanica infection among dairy cattle, rats and humans in the cauvery river valley of southern India. *Southeast Asian Journal of Tropical Medicine and Public Health*. 2011;42(3):679-86.
289. Kawabata H, Sakakibara S, Imai Y, Masuzawa T, Fujita H, Tsurumi M, et al. First record of *Leptospira borgpetersenii* isolation in the Amami Islands, Japan. *Microbiology and Immunology*. 2006;50(6):429-34.
290. Gangadhar NL, Rajasekhar M. Record of rodent as natural reservoir host of *Leptospira Javanica* in Karnataka. *Indian Veterinary Journal*. 1998;75(6):563-4.
291. Kobayashi Y, Kusaba T, Ueki R. Isolation of *Leptospira Javanica* from rats on Ishigaki Island. *The American journal of tropical medicine and hygiene*. 1972;21(3):342-4.
292. Dikken H, Adinarayanan N, Timmer VE. A new leptospiral serovar from India in the Javanica serogroup. *Tropical and geographical medicine*. 1981;33(4):339-41.
293. Li C, Li Z, Gao J. Identification of four new *Leptospira* strains. *Weishengwu Xuebao*. 1988;28(2):173-8.
294. Roth EE, Geer B, Moore M, Newman KAY, Sanford GE, Adams WV. Serologic analysis of two new related leptospiral serotypes isolated in Louisiana. *Zoonoses Res*. 1964;3((1)):31-8.
295. Galton MM, Gorman GW, Shotts EB. A new leptospiral subserotype in the Hebdomadis group. *Publ Health Repts*. 1960;75((10)):917-21.
296. Glosser JW, Sulzer CR, Reynolds GC, Whitsett DK. Isolation of leptospiral serotype Szwajizak from dairy cattle in Oregon. *Proceedings, annual meeting of the United States Animal Health Association*. 1974(78):119-25.

297. Green AE, Sulzer CR, Evarard CO, Jones WL. Four new *Leptospira* serotypes from Trinidad. The West Indian medical journal. 1978;27(2):117-26.
298. Paiva-Cardoso M, Arent Z, Gilmore C, Hartskeerl R, Ellis WA. Altodouro, a new *Leptospira* serovar of the Pomona serogroup isolated from rodents in northern Portugal. Infect Genet Evol. 2013;13:211-7.
299. Zhang F, Long P, Meng P, Wang J. Identification of *Leptospira* Kunming of Pomona serogroup. Acta Microbiologica Sinica. 1987;27(1):88-91.
300. Cernuha JG, Kokovin IL. The relationship between the antigenic structure of the Pomona serogroup of leptospiral serotypes and their circulation in particular species of animals in the USSR. Bulletin of the World Health Organization. 1967;37(2):335-40.
301. Zieris H. Zur Epizootiologie von Infektionen durch *Leptospira interrogans* serovar. Mozdok in der ehemaligen DDR. Monatshefte fuer Veterinaermedizin. 1991;46(10):355-8.
302. Zieris H, Wilhelm A. Infection with *Leptospira interrogans*, serovar mozdok, in cattle. Tierarztliche Praxis. 1992;20(1):33-7.
303. Hathaway SC, Marshall RB, Little TW, Headlam SA, Winter PJ. Identification by cross-agglutination absorption and restriction endonuclease analysis of leptospires of the Pomona serogroup isolated in the United Kingdom. Research in veterinary science. 1985;39(2):151-6.
304. Pritchard DG, Todd N, Barlow A, Little SA. Outbreak of *Leptospira-interrogans* serovar Mozdok in sows in Dorset England UK. Israel Journal of Veterinary Medicine. 1987;43(4):343-.
305. Bertasio C, Papetti A, Scaltriti E, Tagliabue S, D'Incau M, Boniotti MB. Serological survey and molecular typing reveal new *Leptospira* serogroup Pomona strains among pigs of northern Italy. Pathogens. 2020;9(5).
306. Chernukha YG, Soloshenko IZ, Semenova LP, Bobrovskii VN. Material on epidemiology of leptospirosis in Northern Osetia ASSR English summ. Zhur Mikrobiol Epidemiol I Immunobiol. 1963;40((5)):52-5.
307. Draghi MG, Brihuega B, Benitez D, Sala JM, Biotti GM, Pereyra M, et al. Leptospirosis outbreak in calves from Corrientes Province, Argentina. Revista Argentina de Microbiologia. 2011;43(1):42-4.
308. Herr S, Riley AE, Naser JA, Roux D, De Lange JD. *Leptospira-interrogans-ssp-pomona* associated with abortion in cattle isolation methods and laboratory animal histo pathology. Onderstepoort Journal of Veterinary Research. 1982;49(1):57-62.
309. Tjalma RA, Galton MM. Human leptospirosis in Iowa. Amer J Trop Med Hyg. 1965;14((3)):387-96.
310. Gluhovschi N, Topciu V, Levin S, Girban I, Barbat I. The identification and investigation of some foci of leptospirosis with enzootic evolution in cattle in the Banat region. Institutul Agronomic Timisoara Lucrari Stiintifice Seria Medicina Veterinara. 1965;8:81-8.
311. Clark LG, Kresse JI, Marshak RR, Hollister CJ. *Leptospira* Pomona isolations by direct blood culture of clinically infected cattle. Jour Amer Vet Med Assoc. 1960;137((11)):668-9.
312. Fontanals A, Llorente P, Samartino L, Mundo S. *Leptospira interrogans* serovar Pomona: detection of antigenic differences among 3 regional isolates from cattle and a reference strain. Revista Argentina de microbiologia. 2001;33(2):108-12.
313. Langoni H, de Souza LC, da Silva AV, Luvizotto MC, Paes AC, Luchéis SB. Incidence of leptospiral abortion in Brazilian dairy cattle. Preventive veterinary medicine. 1999;40(3-4):271-5.

314. White FH, Sulzer KR, Engel RW. Isolations of *Leptospira interrogans* serovars Hardjo, Balcanica, and Pomona from cattle at slaughter. American journal of veterinary research. 1982;43(7):1172-3.
315. Stoenner HG. Leptospiral abortion of beef cattle caused by *Leptospira Pomona* and *Leptospira Hardjo*. Journal of the American Veterinary Medical Association. 1967;151(8):1087-90.
316. Thiermann AB, Handsaker AL, Moseley SL, Kingscote B. New method for classification of leptospiral isolates belonging to serogroup Pomona by restriction endonuclease analysis: serovar Kennewicki. Journal of Clinical Microbiology. 1985;21(4):585-7.
317. Morter RL, Ray JA, Chapel DF. *Leptospira Pomona* isolation from naturally occurring canine infections. Jour Amer Vet Med Assoc. 1959;135((11)):570-1.
318. Blood BD, Szyfres B, Moya V. Natural *Leptospira Pomona* infection in the pampas cavy. Publ Hlth Repts. 1963;78((6)):537-42.
319. Faber NA, Crawford M, LeFebvre RB, Buyukmihci NC, Madigan JE, Willits NH. Detection of *Leptospira* spp. in the aqueous humor of horses with naturally acquired recurrent uveitis. Journal of Clinical Microbiology. 2000;38(7):2731-3.
320. Roberts SJ, York CJ, Robinson JW. An outbreak of leptospirosis in horses on a small farm. Jour Amer Vet Med Assoc. 1952;121((907)):237-42.
321. Ferris DH, Andrews RD. *Leptospira Pomona* in the feral cat. Amer J Veterinary Res. 1965;26((111 Pt. 1)):373-6.
322. McGowan JE, Karstad L. Field and laboratory studies of skunks, raccoons and groundhogs as reservoirs of *Leptospira Pomona*. Can Veterinary J. 1965;6((10)):243-52.
323. Delaney MA, Colegrove KM, Spraker TR, Zuerner RL, Galloway RL, Gulland FM. Isolation of *Leptospira* from a phocid: acute renal failure and mortality from leptospirosis in rehabilitated northern elephant seals (*Mirounga angustirostris*), California, USA. J Wildl Dis. 2014;50(3):621-7.
324. Roth EE, Adams WV, Sanford GE, Newman KAY, Moore M, Greer B. Isolation of *Leptospira Pomona* from white-tailed deer in Louisiana. Amer Jour Vet Res. 1964;25((104)):259-61.
325. Abdulla PK, Karstad L, Fish NA. Cultural and serological evidence of leptospirosis in deer in Ontario. Canadian Vet Jour. 1962;3((3)):71-8.
326. Reilly JR, Muraschi TF, Dean DJ. Leptospirosis in the white-tailed deer, *Odocoileus virginianus*. Cornell Vet. 1962;52((1)):94-8.
327. Nagy G. Comparative pathogenicity study of *Leptospira interrogans* serovar Pomona strains. Acta Veterinaria Hungarica. 1993;41(3-4):315-24.
328. Gochenour WS, Johnston RV, Yager RH, Gochenour WS. Porcine leptospirosis. Amer Jour Vet Res. 1952;13((47)):158-60.
329. Robinson AJ, Ramadass P, Lee A, Marshall RB. Differentiation of subtypes within *Leptospira interrogans* serovars Hardjo, Balcanica and Tarassovi, by bacterial restriction-endonuclease DNA analysis (BRENDA). Journal of Medical Microbiology. 1982;15(3):331-8.
330. Miraglia F, Moreno AM, Gomes CR, Paixão R, Liuson E, Morais ZM, et al. Isolation and characterization of *Leptospira interrogans* from pigs slaughtered in São Paulo State, Brazil. Brazilian Journal of Microbiology. 2008;39(3):501-7.
331. Miraglia F, Moreno LZ, Morais ZM, Langoni H, Shimabukuro FH, Dellagostin OA, et al. Characterization of *Leptospira interrogans* serovar Pomona isolated from swine in Brazil. J Infect Dev Ctries. 2015;9(10):1054-61.



332. Prager KC, Greig DJ, Alt DP, Galloway RL, Hornsby RL, Palmer LJ, et al. Asymptomatic and chronic carriage of *Leptospira interrogans* serovar Pomona in California sea lions (*Zalophus californianus*). *Veterinary Microbiology*. 2013;164(1-2):177-83.
333. Gulland FMD, Koski M, Lowenstine LJ, Colagross A, Morgan L, Spraker T. Leptospirosis in California sea lions (*Zalophus californianus*) stranded along the central California coast, 1981-1994. *Journal of Wildlife Diseases*. 1996;32(4):572-80.
334. Feresu SB, Bolin CA, Korver H, Terpstra WJ. Classification of *Leptospire*s of the Pyrogenes Serogroup Isolated from Cattle in Zimbabwe by Cross-Agglutinin Absorption and Restriction Fragment Length Polymorphism Analysis. *International Journal of Systematic Bacteriology*. 1994;44(3):541-6.
335. Galton MM, Aragon PR, Jacalne AV, Shotts EB, Sulzer CR. A new leptospiral serotype in the Pyrogenes group, *Leptospira* Manilae. *Jour Infect Dis*. 1963;112((2)):164-6.
336. Roth EE, Adams WV, Greer B, Sanford GE, Moore M, Newman KAY. New leptospiral serotype in the Pyrogenes serogroup. *Publ Hlth Repts*. 1963;78((8)):727-30.
337. Ezeh AO, Kmety E, Ellis WA, Addo PB, Adesiyun AA. A new leptospiral serovar in the Pyrogenes serogroup isolated in Nigeria. *Revue scientifique et technique (International Office of Epizootics)*. 1990;9(4):1195-6.
338. Topacio TM, Famatiga EG, Suva MH. Studies on leptospirosis in the Philippines part 1 report on the isolation of *Leptospira*-Pyrogenes from a pig. *Philippine Journal of Veterinary Medicine*. 1968;7(1-2):27-38.
339. Kitaoka M, Mori M, Armitsu Y. Identification of *Leptospira* Pyrogenes isolated from a swine in the Philippines in 1967. *Japanese journal of medical science & biology*. 1976;29(1):49-51.
340. McClintock CS, McGowan MR, Corney BG, Colley J, Smythe L, Dohnt M, et al. Isolation of *Leptospira interrogans* serovars Hardjo and Zanoni from a dairy herd in north Queensland. *Australian Veterinary Journal*. 1993;70(10):393-4.
341. Sichuan Sanit Anti-Epidemic STN, et al. A new serotype of pathogenic *Leptospira* *Leptospira-ranarum*-Pingchang. *Zhonghua Weishengwuxue He Mianyixue Zazhi*. 1984;4(4):220-1.
342. Yasuda PH, Sulzer CR, Giorgi W, Soares MEG. *Leptospira-biflexa* serovar Ranarum isolated from aborted equine fetus. *Revista de Microbiologia*. 1986;17(1):25-7.
343. Babudieri B. Systematics of a *Leptospira* strain isolated from frog. *Experientia (Basel)*. 1972;28(10):1252-3.
344. Cordeiro F, Sulzer CR, Ramos ADA. 2 new leptospiral serovars in the Javanica group isolated in Brazil. *Revista de Microbiologia*. 1981;12(2):55-60.
345. Hathaway SC. Leptospirosis in the possum *trichosurus-vulpecula*. *Zoology Publications from Victoria University of Wellington*. 1981(74):157-62.
346. Hathaway SC, Blackmore DK, Marshall RB. The serologic and cultural prevalence of *Leptospira interrogans* serovar Balanica in possums (*Trichosurus vulpecula*) in New Zealand. *Journal of Wildlife Diseases*. 1978;14(3):345-50.
347. Vasconcellos SA, Oliveira JCF, Morais ZM, Baruselli PS, Amaral R, Pinheiro SR, et al. Isolation of *Leptospira santarosai*, serovar Guaricura from buffaloes (*Bubalus bubalis*) in Vale do Ribeira, São Paulo, Brazil. *Brazilian Journal of Microbiology*. 2001;32(4):298-300.
348. Gerritsen MJ, Koopmans MJ, Dekker TCEM, De Jong MCM, Moerman A, Olyhoek T. Effective treatment with dihydrostreptomycin of naturally infected cows shedding *Leptospira interrogans* serovar Hardjo subtype Shardjobovis. *American Journal of Veterinary Research*. 1994;55(3):339-43.

349. Kingscote BF, Proulx J. The successful management of *Leptospira-hardjo* infection in a beef herd in northern Ontario Canada. Canadian Veterinary Journal. 1986;27(11):435-9.
350. Ellis WA, Thiermann AB, Montgomery J, Handsaker A, Winter PJ, Marshall RB. Restriction endonuclease analysis of *Leptospira interrogans* serovar Hardjo isolates from cattle. Research in veterinary science. 1988;44(3):375-9.
351. Ellis WA, Songer JG, Montgomery J, Cassells JA. Prevalence of *Leptospira interrogans* serovar hardjo in the genital and urinary tracts of non-pregnant cattle. The Veterinary record. 1986;118(1):11-3.
352. Marshall RB, Winter PJ, Thiermann AB, Ellis WA. Genotypes of *Leptospira interrogans* serovar Hardjo in cattle in the UK. The Veterinary record. 1985;117(25-26):669-70.
353. Allan KJ, Halliday JEB, Moseley M, Carter RW, Ahmed A, Goris MGA, et al. Assessment of animal hosts of pathogenic *Leptospira* in northern Tanzania. PLoS Negl Trop Dis. 2018;12(6):e0006444.
354. Koval AA, Brihuega BF, Grune Löffler S, López S, Saint Martin M, Lagioia GG, et al. [First isolation of *Leptospira borgpetersenii* serovar Hardjo type Hardjo Bovis from a clinical case in cattle in Argentina]. Rev Argent Microbiol. 2020;52(3):198-201.
355. Brem S, Kopp H, Meyer P, Hollmann P. First isolation of *Leptospira-interrogans* serovar Hardjo from catheter urine of cattle in west Germany. Israel Journal of Veterinary Medicine. 1987;43(4):307-9.
356. Ellis WA, Thiermann AB. Isolation of leptospires from the genital tracts of Iowa USA cows. American Journal of Veterinary Research. 1986;47(8):1694-6.
357. Ellis WA, Cassells JA, Doyle J. Genital leptospirosis in bulls. Veterinary Record. 1986;118(12):333-.
358. Aycardi ER, Torres B, Guzman VH, Cortes M. Leptospirosis in Colombia isolation of *Leptospira-Hardjo* from beef cattle grazing tropical savannas. Revista Latinoamericana de Microbiologia. 1980;22(2):73-8.
359. Robertson A, Boulanger P, Mitchell D. Isolation and identification of a *Leptospire* of the Hebdomadis sero-group (L. Hardjo) from cattle in Canada. Canadian Jour Comp Med and Vet Med. 1964;28((1)):13-8.
360. Sulzer CR, Shotts EB, Olsen CD, Galton MM, Stewart MA. Leptospirosis due to *Leptospira icterohemorrhagiae* Hardjo in cattle. Jour Amer Vet Med Assoc. 1964;144((8)):888-90.
361. Little TW, Stevens AE, Hathaway SC. Serological studies of British leptospiral isolates of the Sejroe serogroup. III. The distribution of leptospires of the Sejroe serogroup in the British Isles. Epidemiology and infection. 1987;99(1):117-26.
362. Little TW, Stevens AE, Hathaway SC. Serological studies on British leptospiral isolates of the Sejroe serogroup. I. The identification of British isolates of the Sejroe serogroup by the cross agglutinin absorption test. The Journal of hygiene. 1986;97(1):123-31.
363. Ellis WA, O'Brien JJ, Bryson DG, Mackie DP. Bovine leptospirosis: some clinical features of serovar Hardjo infection. The Veterinary record. 1985;117(5):101-4.
364. Te Brugge LA, Dreyer T. *Leptospira interrogans* serovar Hardjo associated with bovine abortion in South Africa. The Onderstepoort journal of veterinary research. 1985;52(1):51-2.
365. Giles N, Hathaway SC, Stevens AE. Isolation of *Leptospira interrogans* serovar Hardjo from a viable premature calf. The Veterinary record. 1983;113(8):174-6.
366. Woods SB, Maley AD, Frerichs GN, Bailey J. Isolation of a hamster lethal strain of *Leptospira interrogans* serotype Hardjo. The Veterinary record. 1983;112(18):437-8.

367. Hathaway SC, Little TW, Stevens AE. Isolation of *Leptospira interrogans* serovar Hardjo from aborted bovine fetuses in England. The Veterinary record. 1982;111(3):58.
368. Ellis WA, O'Brien JJ, Cassells J. Role of cattle in the maintenance of *Leptospira interrogans* serotype Hardjo infection in Northern Ireland. The Veterinary record. 1981;108(26):555-7.
369. White FH, Sutherland GE, Raynor LE, Cottrell CR, Sulzer KR. *Leptospira interrogans* serovars Hardjo and Pomona: causes of infections in dairy cows and humans in Florida. Public health reports (Washington, DC : 1974). 1981;96(3):250-4.
370. Orr HS, Little TW. Isolation of *Leptospira* of the serotype Hardjo from bovine kidneys. Research in veterinary science. 1979;27(3):343-6.
371. Myers DM, Jelambi F. Isolation and identification of *Leptospira* Hardjo from cattle in Argentina. Tropical and geographical medicine. 1975;27(1):63-70.
372. Hanson LE, Brodie BO. *Leptospira* Hardjo infections in cattle. Proceedings, annual meeting of the United States Animal Health Association. 1967;71:210-5.
373. Pereira MC. The epidemiology of leptospirosis in Portugal. Trans R Soc Trop Med Hyg. 1989;83(1):132.
374. Roth EE, Galton MM. Isolation and identification of *Leptospira* Hardjo from cattle in. American journal of veterinary research. 1960;21:422-7.
375. Hamond C, Dirsmith KL, LeCount K, Soltero FV, Rivera-Garcia S, Camp P, et al. *Leptospira borgpetersenii* serovar Hardjo and *Leptospira santarosai* serogroup Pyrogenes isolated from bovine dairy herds in Puerto Rico. Front Vet Sci. 2022;9:1025282.
376. Myers DM. Serological studies and isolations of serotype Hardjo and *Leptospira biflexa* strains from horses of Argentina. Journal of clinical microbiology. 1976;3(6):548-55.
377. Waitkins SA, Wanyangu S, Palmer M. The coypu as a rodent reservoir of *Leptospira* infection in Great Britain. The Journal of hygiene. 1985;95(2):409-17.
378. Cousins DV, Ellis TM, Parkinson J, McGlashan CH. Evidence for sheep as a maintenance host for *Leptospira interrogans* serovar hardjo. The Veterinary record. 1989;124(5):123-4.
379. Bahaman AR, Marshall RB, Blackmore DK, Hathaway SW. Isolation of *Leptospira interrogans* serovar Hardjo from sheep in New Zealand. New Zealand veterinary journal. 1980;28(8):1980.
380. Hathaway SC, Ellis WA, Little TW, Stevens AE, Ferguson HW. *Leptospira interrogans* serovar Hardjo in pigs: a new host-parasite relationship in the United Kingdom. The Veterinary record. 1983;113(7):153-4.
381. Kingscote B. Isolation of a hamster-lethal strain of *Leptospira* Hardjo. The Canadian veterinary journal La revue veterinaire canadienne. 1980;21(9):266.
382. Parnas J, Cybulska M. *Leptospira Polonica*: A new serotype. Int J Syst Bacteriol. 1966;16((3)):305-8.
383. Petersen CB. L. Saxkoebing, ein neuer serologischer Leptospiraty. Ada Path Et Microbiol Scand. 1944;21((1)):165-80.
384. Sebek Z, Sixl W, Sixl-Voigt B, Kock M, Stunzner D, Valova M. First evidence of the leptospirosis natural foci of the serotype Saxkoebing in Austria. Geographia medica Supplement = Geographia medica Sonderband. 1989;2:17-22.
385. Semenova LP, Soloshenko IZ, Anan'in VV. *Leptospira* of the Hebdomadis group. 3. Detection of the subtype L. Sejroe Balcanica in the Soviet Union. Zhurnal mikrobiologii, epidemiologii, i immunobiologii. 1965;42(4):61-4.

386. Michna SW, Campbell RSF. The isolation of *Leptospira*-Sejroe from the kidneys of aborting cattle. *Veterinary Record*. 1969;84(4):83-6.
387. Scanziani E, Crippa L, Giusti AM, Luini M, Pacciarini ML, Tagliabue S, et al. *Leptospira interrogans* serovar Sejroe infection in a group of laboratory dogs. *Laboratory Animals (London)*. 1995;29(3):300-6.
388. Higa HH, Fujinaka IT. Prevalence of rodent and mongoose leptospirosis on the Island of Oahu. *Public health reports (Washington, DC : 1974)*. 1976;91(2):171-7.
389. Plesko I, Janovicova EVA, Lac JAN. Contribution on the significance of cold-blooded animals in the circulation of *Leptospira* in nature English, French, Spanish and Russian summ. *Zentralbl Bakt Parasitenk Infektionskrankh Hyg*. 1964;192((4)):482-4.
390. Bahaman AR, Ibrahim AL, Stallman ND. *Leptospira interrogans* serovar Unipertama isolated in Malaysia. *International journal of systematic bacteriology*. 1990;40(1):98-9.
391. Carroll RE, Le Clair RA. Isolation of leptospiral serotype Patoc from cattle in southern California. *American journal of veterinary research*. 1969;30(12):2231-2.
392. Aycardi ER, Myers DM, Torres B. A new leptospiral serovar in the Tarassovi serogroup from Colombia. *Zentralblatt fuer Veterinaermedizin Reihe B*. 1980;27(5):425-8.
393. Morahan RJ. Isolation of leptospires in the Tarassovi (Hyos) serogroup from a bandicoot (*Marsupialia, peramelidae*) from Koil Island, territory of Papua and New Guinea. *The Medical journal of Australia*. 1968;2(1):18-9.
394. Semenova LP, Soloshenko LI. Isolation of subserotypes of *Leptospirae* of the Tarassovi S. Hyos group, previously unknown in the U.S.S.R. *Journal of hygiene, epidemiology, microbiology, and immunology*. 1967;11(4):472-7.
395. Nicolescu M, Alămiță E, Borșai L. Serotype identification of *Leptospira* strains isolated in Romania. I. Strains belonging to the Tarassovi serogroup. *Archives Roumaines de Pathologie Experimentale et de Microbiologie*. 1970;29(4):637-41.
396. Feresu SB, Bolin CA, Korver H. A new leptospiral serovar, Ngavi, in the Tarassovi serogroup isolated from Zimbabwe oxen. *International Journal of Systematic Bacteriology*. 1998;48(1):207-13.
397. Chernukha YG, Isayeva RA, Mustafayeva NI. Antigenic properties of some strains of *Leptospirae* of the Tarassovi serological group systematic position of the strain perepelicin and new serological type Vietnam. *Journal of Hygiene Epidemiology Microbiology and Immunology (Prague)*. 1969;13(1):118-25.
398. Hamond C, LeCount K, Putz EJ, Bayles DO, Camp P, Goris MGA, et al. Bovine leptospirosis due to persistent renal carriage of *Leptospira borgpetersenii* serovar Tarassovi. *Front Vet Sci*. 2022;9:848664.
399. Glosser JW, Sulzer CR, Eberhardt M, Winkler WG. Cultural and serologic evidence of *Leptospira interrogans* serotype Tarassovi infection in turtles. *Journal of wildlife diseases*. 1974;10(4):429-35.
400. Baryshev PB, Drozhzhin VN. The role of agricultural animals as a potential of leptospirosis infection in the Altai krai English summ. *Zhur Mikrobiol Epidemiol Immunobiol*. 1963;40((12)):60-4.
401. Ryan TJ, Marshall RB, Blackmore DK. *Leptospira interrogans* serovar Tarassovi in New Zealand. *The New Zealand medical journal*. 1976;84(570):171.
402. Zamora J, Riedemann S, Frias M. Leptospirosis porcina. Primer aislamiento en Chile de *Leptospira interrogans* serovar Tarassovi. *Journal of Veterinary Medicine Series B*. 1988;35(2):105-8.

403. Feraud Tercilla D, Abeledo García MA. First report in Cuba of *Leptospira interrogans* serovar Tarassovi and clinical and epidemiological characteristics of swine leptospirosis foci. REDVET. 2005;6(4):040502.
404. Corney BG, Slack AT, Symonds ML, Dohnt MF, McClintock CS, McGowan MR, et al. *Leptospira Weillii* serovar Topaz, a new member of the Tarassovi serogroup isolated from a bovine source in Queensland, Australia. International Journal of Systematic and Evolutionary Microbiology. 2008;58(Part 10):2249-52.
405. Slack AT, Symonds ML, Dohnt MF, Corney BG, Smythe LD. Epidemiology of *Leptospira weillii* serovar Topaz infections in Australia. Communicable diseases intelligence quarterly report. 2007;31(2):216-22.
406. Moreno LZ, Miraglia F, Marvulo MFV, Silva JCR, Paula CD, Costa BLP, et al. Characterization of *Leptospira santarosai* serogroup Grippotyphosa serovar Bananal isolated from capybara (*Hydrochaeris hydrochaeris*) in Brazil. Journal of Wildlife Diseases. 2016;52(3):688-93.
407. Lilenbaum W, Kremer F, Ristow P, Dellagostin O, Bourhy P, Hartskeerl R, et al. Molecular characterization of the first leptospires isolated from goats in Brazil. Brazilian Journal of Microbiology. 2014;45(4):1527-30.
408. Cinco M, Banfi E, Schonberg A, Everard COR. Classification of seven *Leptospira* water strains by classical methods and identification of three new serovars. International Journal of Systematic Bacteriology. 1987;37(3):296-7.
409. Nally JE, Arent Z, Bayles DO, Hornsby RL, Gilmore C, Regan S, et al. Emerging infectious disease implications of invasive mammalian species: the greater white-toothed shrew (*Crocidura russula*) is associated with a novel serovar of pathogenic *Leptospira* in Ireland. PloS Neglected Tropical Diseases. 2016;10(12).

Table S11 PRISMA checklist

| Section and Topic       | Item # | Checklist item   | Location where item is reported  |
|-------------------------|--------|--|--|
| <b>TITLE</b>            |        |  |  |
| Title                   | 1      | Identify the report as a systematic review.  | Title  |
| <b>ABSTRACT</b>         |        |  |  |
| Abstract                | 2      | See the PRISMA 2020 for Abstracts checklist.   | Abstract, adhered to the wordcount of the journal so databases are not listed. |
| <b>INTRODUCTION</b>     |        |  |  |
| Rationale               | 3      | Describe the rationale for the review in the context of existing knowledge.  | Introduction, last para  |
| Objectives              | 4      | Provide an explicit statement of the objective(s) or question(s) the review addresses.   | Introduction, last para  |
| <b>METHODS</b>          |        |  |  |
| Eligibility criteria    | 5      | Specify the inclusion and exclusion criteria for the review and how studies were grouped for the syntheses.  | Methods, second para, data analysis  |
| Information sources     | 6      | Specify all databases, registers, websites, organisations, reference lists and other sources searched or consulted to identify studies. Specify the date when each source was last searched or consulted.  | Methods, first para,   |
| Search strategy         | 7      | Present the full search strategies for all databases, registers and websites, including any filters and limits used.   | S1 search strategy   |
| Selection process       | 8      | Specify the methods used to decide whether a study met the inclusion criteria of the review, including how many reviewers screened each record and each report retrieved, whether they worked independently, and if applicable, details of automation tools used in the process.                     | Methods, third para  |
| Data collection process | 9      | Specify the methods used to collect data from reports, including how many reviewers collected data from each report, whether they worked independently, any processes for obtaining or confirming data from study investigators, and if applicable, details of automation tools used in the process. | Methods, data abstraction  |

| Section and Topic             | Item # | Checklist item  | Location where item is reported        |
|-------------------------------|--------|---|--|
| Data items                    | 10a    | List and define all outcomes for which data were sought. Specify whether all results that were compatible with each outcome domain in each study were sought (e.g. for all measures, time points, analyses), and if not, the methods used to decide which results to collect. | Methods, data abstraction              |
|                               | 10b    | List and define all other variables for which data were sought (e.g. participant and intervention characteristics, funding sources). Describe any assumptions made about any missing or unclear information.  | Methods, data abstraction              |
| Study risk of bias assessment | 11     | Specify the methods used to assess risk of bias in the included studies, including details of the tool(s) used, how many reviewers assessed each study and whether they worked independently, and if applicable, details of automation tools used in the process.             | Not applicable, discussion – last para |
| Effect measures               | 12     | Specify for each outcome the effect measure(s) (e.g. risk ratio, mean difference) used in the synthesis or presentation of results.   | Not applicable                         |
| Synthesis methods             | 13a    | Describe the processes used to decide which studies were eligible for each synthesis (e.g. tabulating the study intervention characteristics and comparing against the planned groups for each synthesis (item #5)).  | Not applicable                         |
|                               | 13b    | Describe any methods required to prepare the data for presentation or synthesis, such as handling of missing summary statistics, or data conversions.   | Data analysis                          |
|                               | 13c    | Describe any methods used to tabulate or visually display results of individual studies and syntheses.  | Data analysis                          |
|                               | 13d    | Describe any methods used to synthesize results and provide a rationale for the choice(s). If meta-analysis was performed, describe the model(s), method(s) to identify the presence and extent of statistical heterogeneity, and software package(s) used.                   | Data analysis                          |
|                               | 13e    | Describe any methods used to explore possible causes of heterogeneity among study results (e.g. subgroup analysis, meta-regression).  | Not applicable                         |
|                               | 13f    | Describe any sensitivity analyses conducted to assess robustness of the synthesized results.  | Not applicable                         |
| Reporting bias assessment     | 14     | Describe any methods used to assess risk of bias due to missing results in a synthesis (arising from reporting biases).   | Discussion                             |
| Certainty assessment          | 15     | Describe any methods used to assess certainty (or confidence) in the body of evidence for an outcome.   | Not applicable                         |
| <b>RESULTS</b>                |        |   |  |
| Study selection               | 16a    | Describe the results of the search and selection process, from the number of records identified in the search to the number of studies included in the review, ideally using a flow diagram.  | Results, first para                    |
|                               | 16b    | Cite studies that might appear to meet the inclusion criteria, but which were excluded, and explain why they were excluded.   | Text S3                                |
| Study                         | 17     | Cite each included study and present its characteristics.   | Table S10                              |

| Section and Topic             | Item # | Checklist item   | Location where item is reported                |
|-------------------------------|--------|--|--|
| characteristics               |        |  |  |
| Risk of bias in studies       | 18     | Present assessments of risk of bias for each included study.   | Not applicable                                 |
| Results of individual studies | 19     | For all outcomes, present, for each study: (a) summary statistics for each group (where appropriate) and (b) an effect estimate and its precision (e.g. confidence/credible interval), ideally using structured tables or plots.   | Results, Table 1, Figure 2, Figure 3, Figure 4 |
| Results of syntheses          | 20a    | For each synthesis, briefly summarise the characteristics and risk of bias among contributing studies.   | Not applicable                                 |
|                               | 20b    | Present results of all statistical syntheses conducted. If meta-analysis was done, present for each the summary estimate and its precision (e.g. confidence/credible interval) and measures of statistical heterogeneity. If comparing groups, describe the direction of the effect. | Not applicable                                 |
|                               | 20c    | Present results of all investigations of possible causes of heterogeneity among study results.   | Not applicable                                 |
|                               | 20d    | Present results of all sensitivity analyses conducted to assess the robustness of the synthesized results.   | Not applicable                                 |
| Reporting biases              | 21     | Present assessments of risk of bias due to missing results (arising from reporting biases) for each synthesis assessed.  | Not applicable                                 |
| Certainty of evidence         | 22     | Present assessments of certainty (or confidence) in the body of evidence for each outcome assessed.  | Not applicable                                 |
| <b>DISCUSSION</b>             |        |  |  |
| Discussion                    | 23a    | Provide a general interpretation of the results in the context of other evidence.  | Discussion, first and second para              |
|                               | 23b    | Discuss any limitations of the evidence included in the review.  | Discussion, final paragraph                    |
|                               | 23c    | Discuss any limitations of the review processes used.  | Discussion, final paragraph                    |
|                               | 23d    | Discuss implications of the results for practice, policy, and future research.   | Discussion para 5, para 6                      |
| <b>OTHER INFORMATION</b>      |        |  |  |



| Section and Topic                              | Item # | Checklist item   | Location where item is reported              |
|--|--------|--|--|
| Registration and protocol                      | 24a    | Provide registration information for the review, including register name and registration number, or state that the review was not registered.   | Not applicable                               |
|  | 24b    | Indicate where the review protocol can be accessed, or state that a protocol was not prepared.   | Not applicable                               |
|  | 24c    | Describe and explain any amendments to information provided at registration or in the protocol.  | Not applicable                               |
| Support  | 25     | Describe sources of financial or non-financial support for the review, and the role of the funders or sponsors in the review.  | Funding statement                            |
| Competing interests                            | 26     | Declare any competing interests of review authors.   | Conflict of interest statement               |
| Availability of data, code and other materials | 27     | Report which of the following are publicly available and where they can be found: template data collection forms; data extracted from included studies; data used for all analyses; analytic code; any other materials used in the review. | Online database, data availability statement |