



Pan American Health Organization

Regional Office of the
World Health Organization



Leptospirosis in the Americas Region – Epidemiological Situation and Challenges



Maria Cristina Schneider, Patricia Najera, Sylvain Aldighieri
PAHO/CHA/IR

Leptospirosis framework from an outbreak perspective in the Region



IHR

<http://www.paho.org/english/ad/dpc/cd/eer-ihrs.htm>



Americas

Natural disaster analysis

http://www.izs.it/vet_it/aliana/2012/48_2/193.pdf

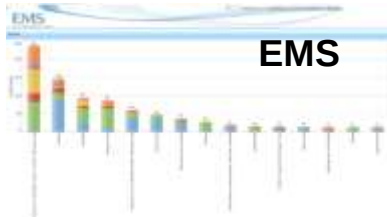


Figure 2
Number of people reported with leptospirosis (duration, Americas, 2004-2005)
Source: The American Health Organization, based on data from the Centers for Disease Control and Prevention (CDC) (11)

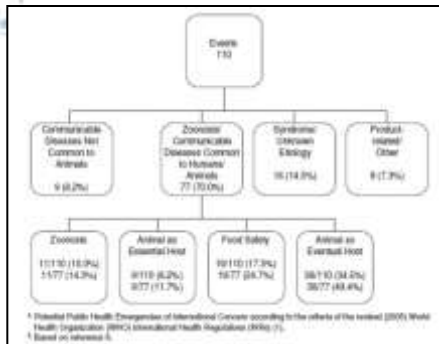


WHO
Burden of
Leptospirosis

<http://www.who.int/zoonoses/diseases/lerg/en/index4.html>



EMS



Risk and drivers analysis

<http://www.mdpi.com/1660-4601/9/11/3883>

Importance of the animal/human interface

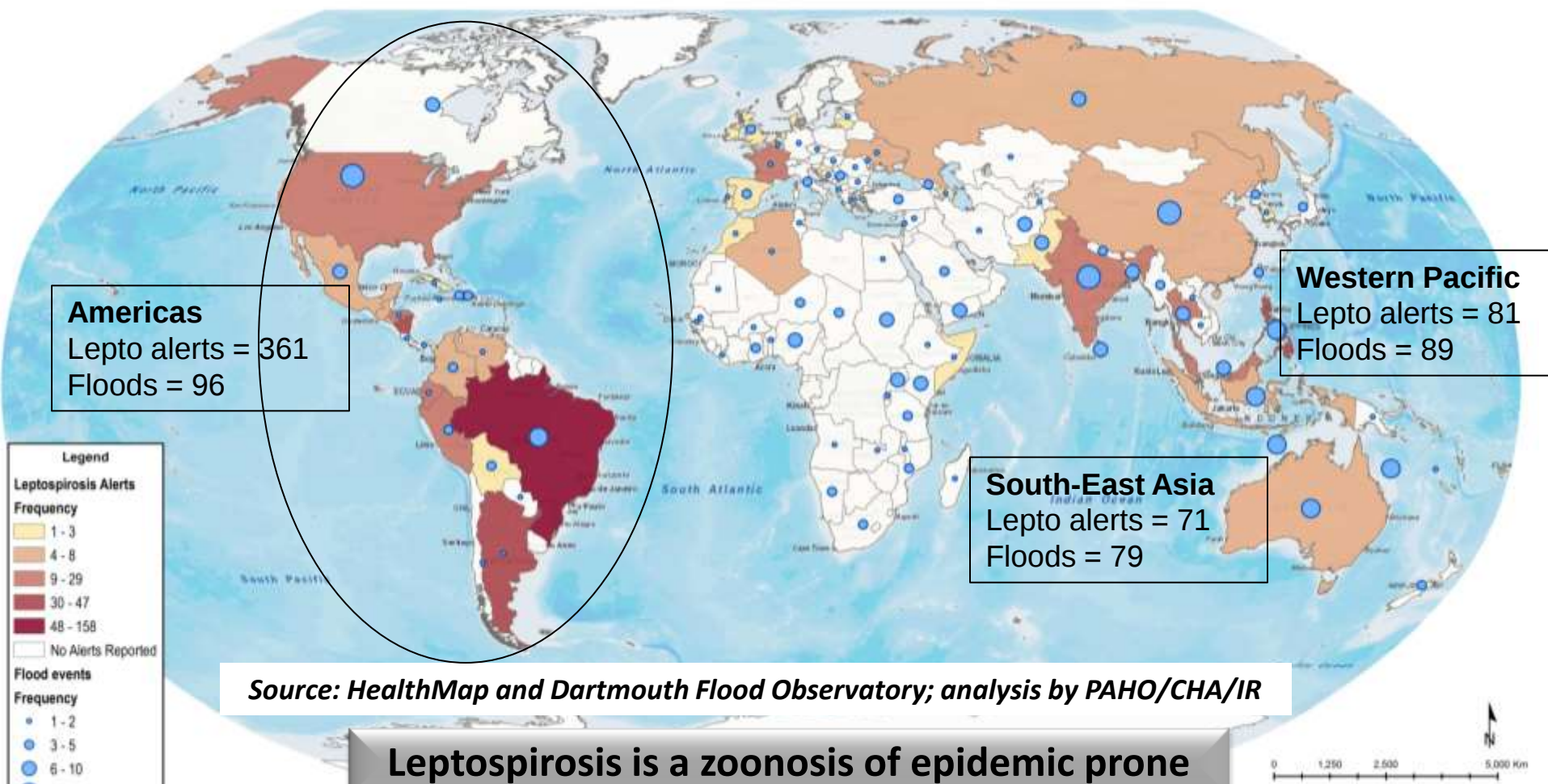
http://new.paho.org/journal/index.php?option=com_docman&task=doc_download&gid=250&Itemid

One Health approach



Indirect exposure through water and soil contaminated by urine from infected animals is the most common route of exposure of this worldwide disease, which is a perfect example of the animal-human-ecosystem interface.

Global alerts of leptospirosis, January 2010 to December 2012



- 562 alerts for leptospirosis in HealthMap (outbreak monitoring and real-time surveillance of emerging public health threats)
- More than half (361 alerts) were in the Americas, particularly in Brazil (158 alerts), Nicaragua (47), and Argentina (43)

Top 15 infectious diseases in the EMS/IHR, global and Americas, June 2007 to February 2013



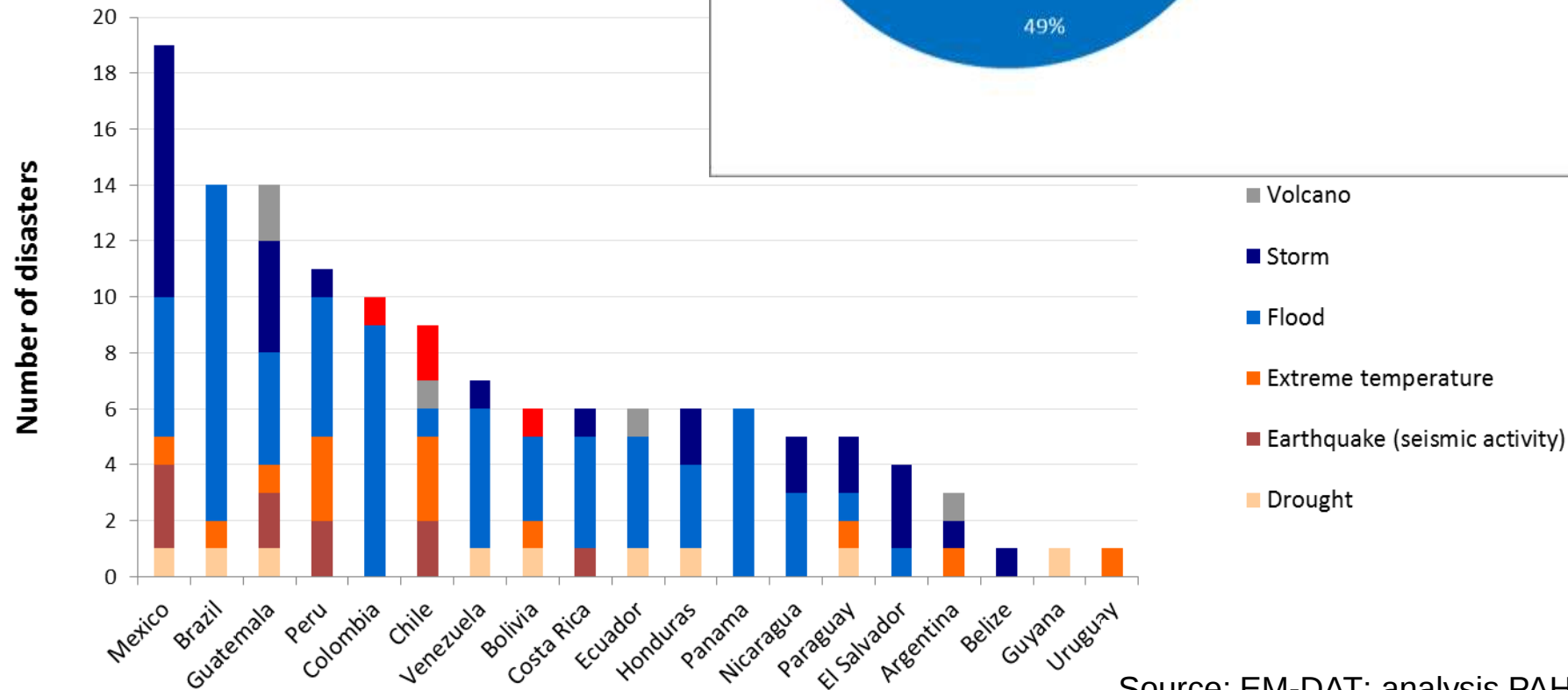
Leptospirosis was the top 6 infectious hazard in the WHO Event Management System (EMS/IHR) and the top 3 in the Americas when analyzed (Feb 2013)



Possible drivers

Environmental

Natural disasters by type, Latin America, 2010 - 2012

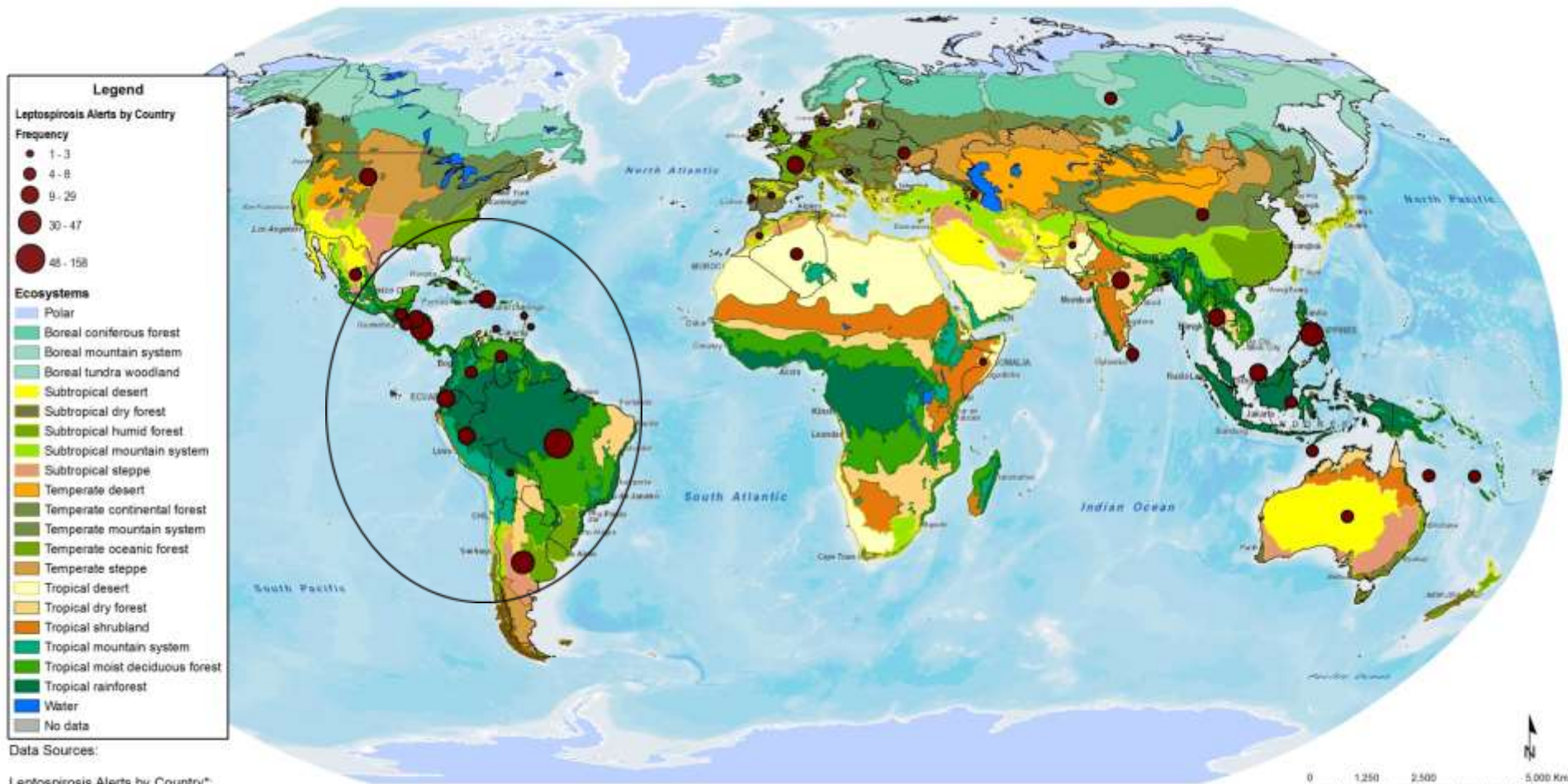


Source: EM-DAT; analysis PAHO

Possible drivers

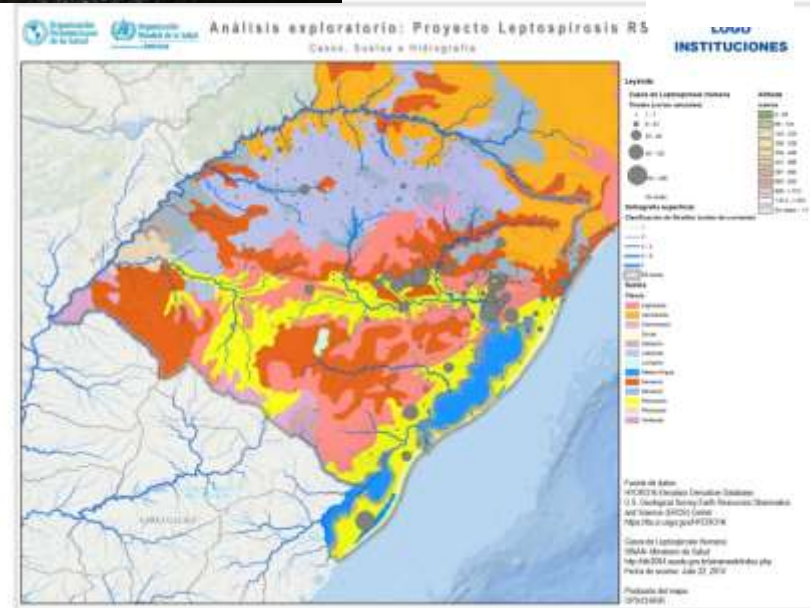
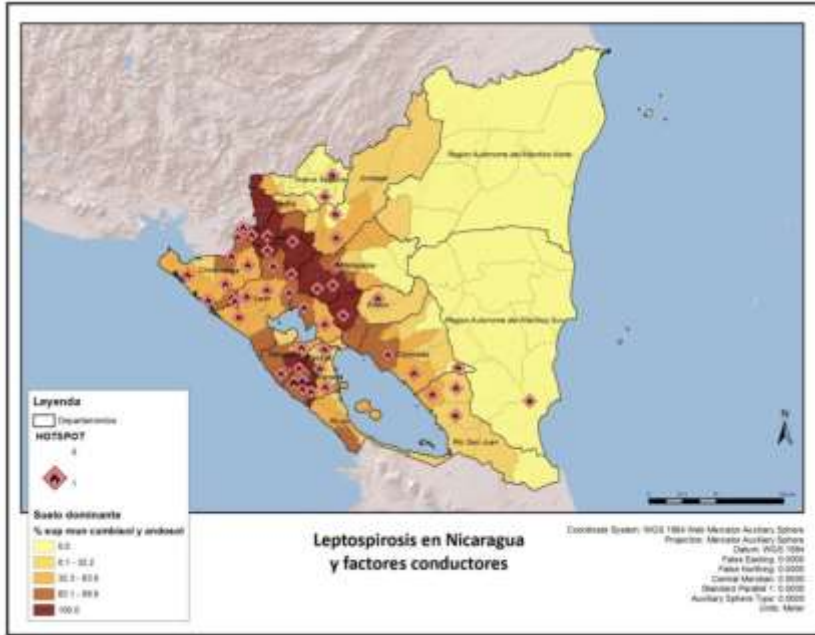
Environmental

Ecosystems:
Tropical and
subtropical



Possible drivers

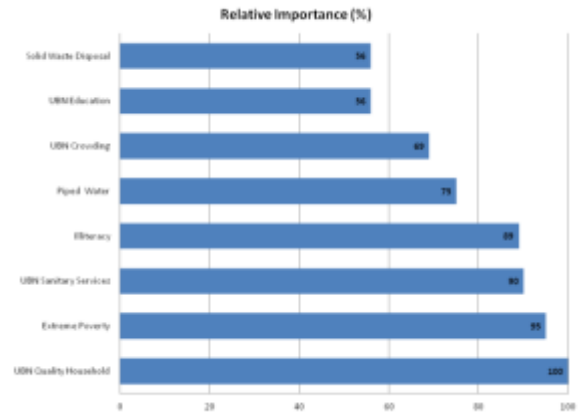
Environmental



Type of soil, hydrography

Possible drivers

Socioeconomic



**Rural poverty
and lack of
sanitation
Slums in urban
areas**



**Pan American
Health
Organization**

Possible drivers

Socioeconomic

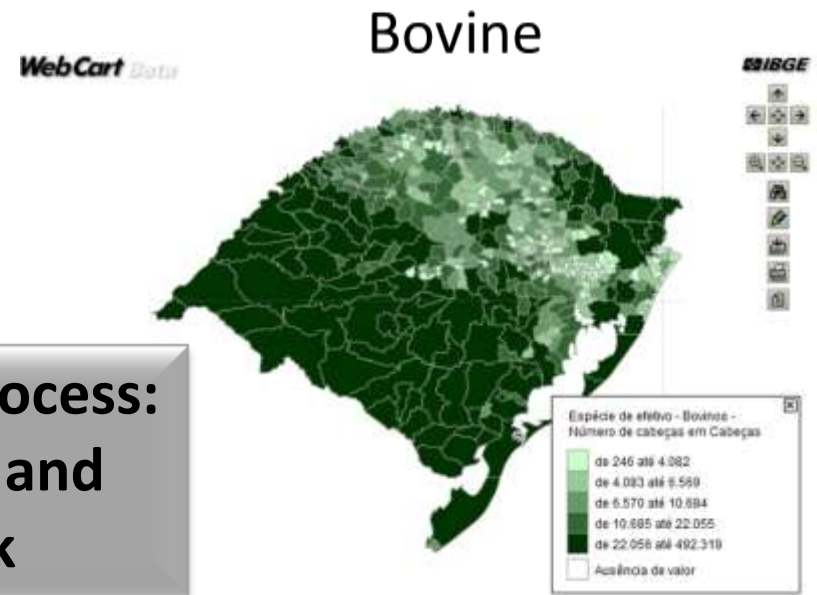
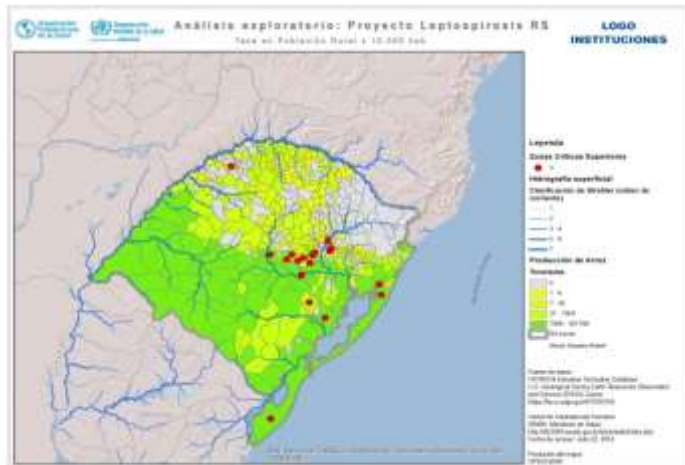


**Productive process:
Agriculture and
livestock**

Rice paddy

World = 740 million tonnes

Americas = 360 million tonnes (48.6%)



Cattle raising

World = 63 million tonnes

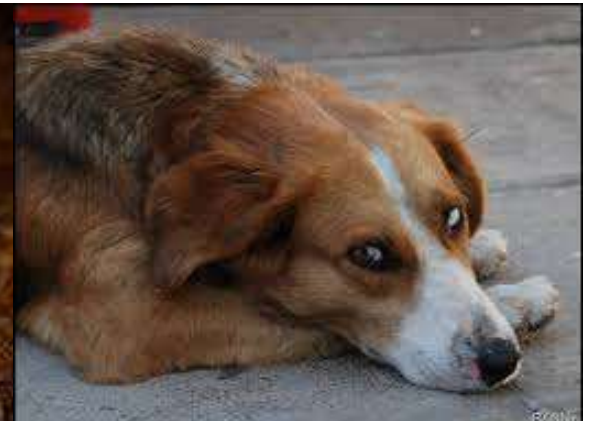
Americas = 30 million tonnes (47.6%)



Regional challenges

Complex cycle with many species involved in a favorable transmission condition

- Many mammalian species are potential carriers in the Americas, including synanthropic rodents, domestic animals, livestock and wild animals; isolations from dog, cattle, seep, swine, bats, fox, squirrels, *ratus norvergus*, *ratus ratus* and others (Petrakovsky 2014).
- Several environmental and socioeconomic drivers in place.



Regional challenges

Limited surveillance in humans and in animals

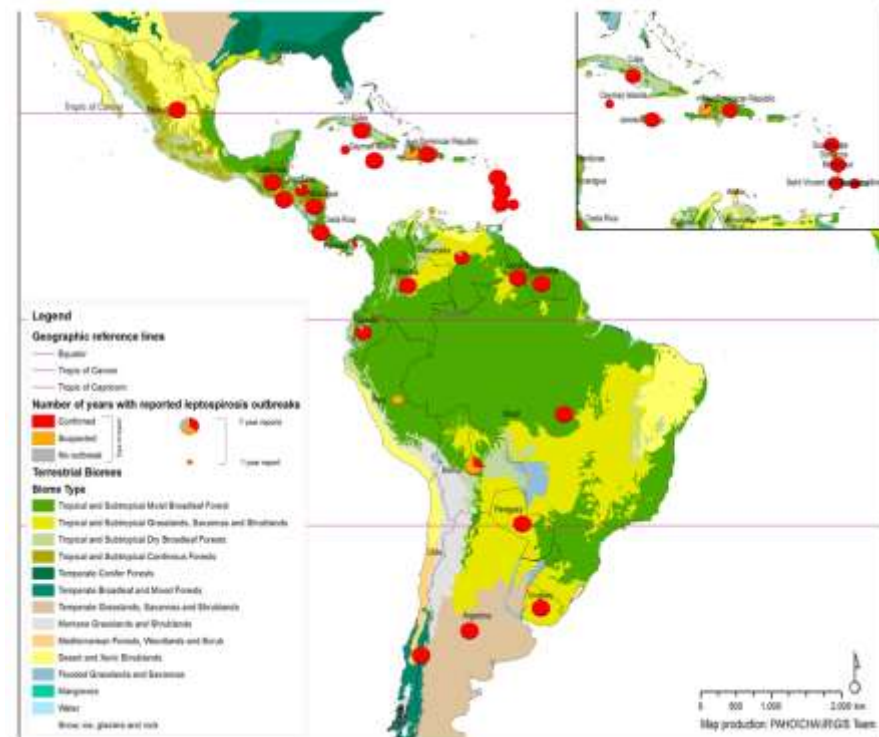
In humans:

- Published leptospirosis data (1996-2005) were available from half of the countries/territories of the Americas (24 out of 48)
- 18 of them had mandatory notification policies for leptospirosis
- 3 countries accounted for 83.1% of the number of cases (Costa 2012)

In animals:

- 27 countries/territories having reported confirmed animal cases to OIE (2005-2011)
- Data about number of cases are limited (Petrakovsky 2014)

Geographic distribution of leptospirosis outbreaks reported to OIE (2005-2011)



Source: Petrakovsky 2014

Regional challenges

Misdiagnosis with dengue and other diseases

- Symptoms similar with other frequent local diseases such as dengue, influenza, hanta virus infection, yellow fever, rickettsiosis, malaria, viral hepatitis and others.

Not yet a “tool ready” disease

- Needs more options of rapid tests for early diagnosis and timely aid
- Vaccines for risk groups or high risk areas



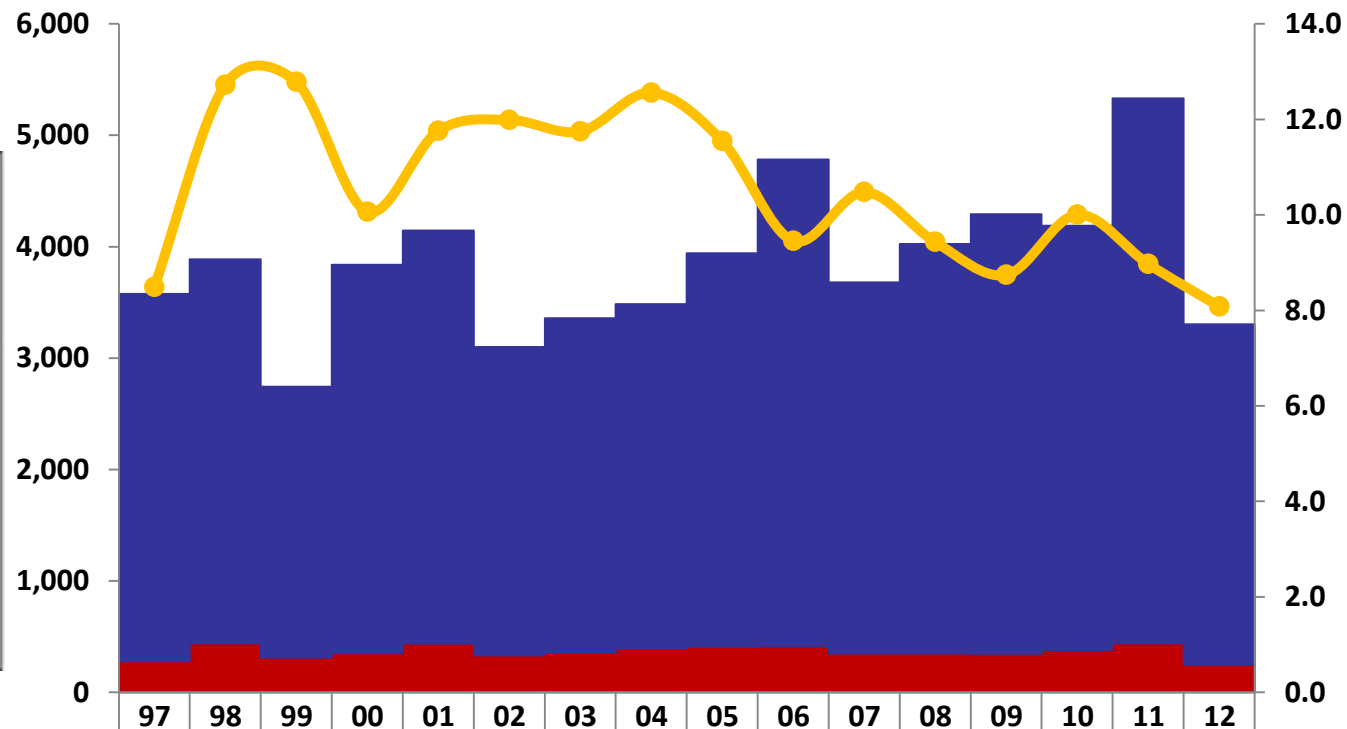
Photo: C Schneider

Regional strength

Several countries already recognize leptospirosis as a public health problem and has programs

Number of

Case Fatality
Rate (%)



Confirmed cases	3,298	3,449	2,433	3,487	3,708	2,769	3,005	3,097	3,534	4,369	3,331	3,679	3,946	3,808	4,893	3,056
Confirmed deaths	280	439	311	351	436	332	353	389	408	413	349	347	345	381	439	247
Fatality rate (%)	8.5	12.7	12.8	10.1	11.8	12.0	11.7	12.6	11.5	9.5	10.5	9.4	8.7	10.0	9.0	8.1

Source: Ministry of Health Brazil

Regional strength

Several countries already coordinate efforts among health, agriculture and others sectors



Outbreak simulation exercise Health and Agriculture Choluteca, Honduras, October 2013

- Joint event from Health and Agricultura
- Four levels (from local to international)
- Government and University
- Participation of 50 profesional (multidisciplinar)
- Hold in the Choluteca that is Honduras “hotspot” for leptospirosis
- One Health approach

Work objectives

PAHO/CHA/IR from an outbreak perspective

Support countries to **predict, detect, prevent and respond** to outbreaks of leptospirosis, thereby reducing mortality and severe cases during outbreaks, as well as reduce the number of cases in risk areas, especially related to the environment.

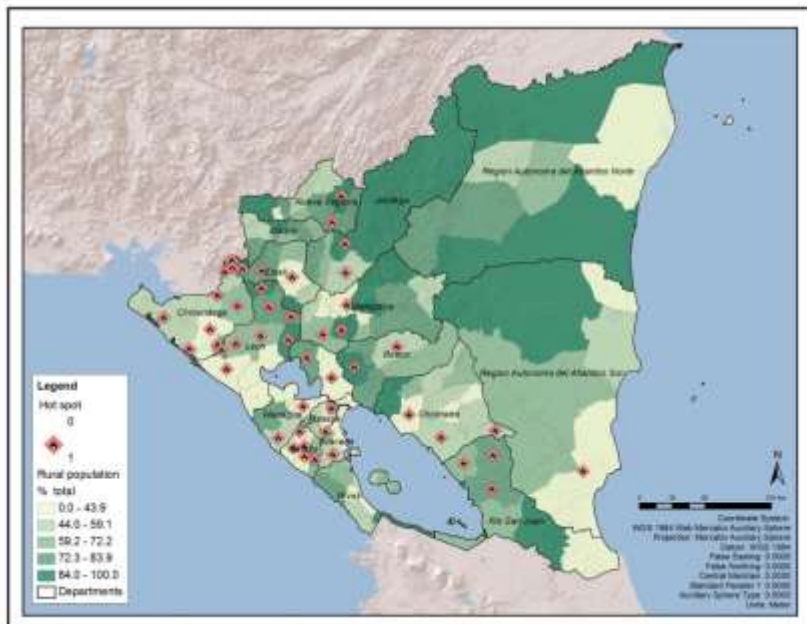


Photos: SILAIS Chinandega, Nicaragua



Current activities at PAHO/CHA/IR from an outbreak perspective

- Analysis of which are the priority countries in the Region related to leptospirosis outbreaks
- Conducted study to identify risk areas and drivers for leptospirosis outbreaks (developed a methodology)
- Development of tool to support countries to predict, detect, prevent and respond to outbreaks of leptospirosis



Current activities (cont.)

- Support WHO and GLEAN initiatives
- Support countries in technical cooperation



During outbreaks *

Save lives

- Early detection (RDT/IgM Elisa/MAT)
- Empiric treatment of probable cases (antibiotic at PHC or community level including IV)
- Individual protection (barriers; bottled water)
- Syndromic surveillance EWARS
- Community prevention (no evidence mass chemoprophylaxis whole pop.; pre-exposure chemop. target pop.)
- Vaccination no current evidence
- Risk communication
- Rodent control no evidence

* GLEAN (2012)

Current activities (cont.)

Organization and participation in meetings and workshops

- **National Forum of Leptospirosis**
- **International meeting of countries that are facing outbreaks of leptospirosis in the Americas**

Nicaragua, August 2012



GLEAN Meeting 2013

Brasilia, Brazil



Simulation Exercise

Choluteca, Honduras, 2013

Current activities (cont.)

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Special Issue "Leptospirosis in the Animal—Human-Ecosystem Interface"

Quicklinks

- [Special Issue Editors](#)
- [Special Issue Information](#)
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A special issue of *International Journal of Environmental Research and Public Health* (ISSN 1660-4601).

Deadline for manuscript submissions: **closed (30 May 2014)**

Special Issue Editors

Guest Editor
Dr. Maria Cristina Schneider
Pan American Health Organization, 525 23rd St, NW, Washington DC 20037, USA
E-Mail: schneidc@paho.org
Interests: evidence-based decision making to predict; respond; and control selected diseases within the animal-human health interface and cross-sectorial collaboration (leptospirosis; rabies and plague); zoonosis; veterinary public health; one health

Guest Editor
Dr. Daniel Forsin Buss
IOC-FIOCRUZ, Av. Brasil 4365, Manguinhos, Rio de Janeiro, RJ, CEP 21045-900, Brazil
E-Mail: dbuss@ioc.fiocruz.br
Interests: relationships between environment and health in the context of sustainable development; biological diversity; ecosystem health; aquatic ecology; biomonitoring; and assessment of the ecological integrity of lakes; rivers; and streams at regional scales through biological surveys; physical & chemical habitat; and catchment conditions

Guest Editor
Dr. Michel Jancloes
Health and Climate Foundation, 1425 K st. NW Suite 350, Washington DC 20005, USA
E-Mail: michel.jancloes@gmail.com
Interests: policy development, incl. health issues and climate changes; sectorial approaches for integrated services delivery; dialogue with high level policy makers and multimedia support; co-chairman of the GLEAN (Global Leptospirosis Environment Action Network) with a focus on outbreaks control

Leptospirosis webpage (www.paho.org/leptospirosis)

Health Topics
Publications
Data and Statistics
Projects and Programs
Links
PAHO in maps

Fact Sheet: focused in responding to outbreaks

Multimedia
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Fact Sheet
Current situation in selected countries
▶ National Forum of Leptospirosis of Nicaragua
▶ International Meeting of Countries that are Facing Leptospirosis Outbreaks in the Americas
Publications and Documents

Leptospirosis



Leptospirosis is a zoonotic disease with epidemic potential, especially after heavy rainfall. It occurs throughout the world and is emerging as an important public health problem in both tropical and subtropical countries, affecting mostly vulnerable populations (WHO 2010; WHO 2011).

Humans usually acquire leptospirosis through direct contact with the urine of infected animals or a urine-contaminated environment. [Read More](#)

Authors: O. Chavez, Nicaragua

Last Updated on Friday, 25 January 2013

:: Fact Sheet: Leptospirosis

[Click here to get more information](#)

:: Current situation in selected countries

- National Forum of Leptospirosis of Nicaragua
- International Meeting of Countries that are Facing Leptospirosis

[Read More...](#)

:: Publications and Documents

- WHO. Human Leptospirosis: Guidance for Diagnosis, Surveillance and Control, 2003
- PAHO. Zoonoses and Communicable Diseases Common to Man and

Report of the meetings in Nicaragua, August 2012

:: Related Sites

- WHO: Leptospirosis website
- WHO: Zoonoses and Veterinary Public Health - Leptospirosis
- PAHO: Member States websites

:: Latest News

• La leptospirosis aten salud (Spanish only)

Del 14 al 16 de agosto de 2012, el Ministerio de Salud y la Organización Panamericana de la Salud realizaron el Foro Nacional y la Reunión Internacional sobre brotes de

International Meeting of Leptospirosis - Nicaragua (Spanish only)



WHO. Human Leptospirosis: Guidance for Diagnosis, Surveillance and Control, 2003



Inclusion of intersectoral documents and websites (One Health)

Information available in English and Spanish

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References and links

WHO: Human leptospirosis: Guidance for diagnosis, surveillance, and control

http://whqlibdoc.who.int/hq/2003/WHO_CDS_CSR_EPH_2002.23.pdf

WHO: Report of the First Meeting of the Leptospirosis Burden Epidemiology Reference Group:

http://whqlibdoc.who.int/publications/2010/9789241599894_eng.pdf

OIE: Leptospirosis Manual

http://www.oie.int/fileadmin/Home/eng/Health_standards/tahm/2.01.09_LEPTO.pdf

WHO: World Health Organization Outbreak Communication Planning Guide:

http://www.searo.who.int/LinkFiles/CDS_WHO_Outbreak_Comm_Planning_Guide.pdf

PAHO: Rodents in Disasters

http://www.paho.org/english/dd/ped/te_rdes.htm

Acha PN, Szyfres B. Leptospirosis. En: Zoonosis y endermedades transmisibles comunes al hombre y a los animales. 3ra ed., vol. I. OPS. Washington, DC: 2003; 175-186. Disponible en:

http://new.paho.org/hq/index2.php?option=com_docman&task=doc_view&gid=4137&Itemid=2518

The International Leptospirosis Society: <http://www.med.monash.edu.au/microbiology/staff/adler/ils.html>

CDC: <http://wwwnc.cdc.gov/travel/yellowbook/2010/chapter-5/leptospirosis.aspx>

Caribbean Epidemiology Center/PAHO: <http://carec.org>

Brazil Ministry of Health: <http://portal.saude.gov.br/portal/arquivos/pdf/abcad22.pdf>

India: http://whoindia.org/LinkFiles/Communicable_Diseases_Leptospirosis_lab_manual.pdf



Thank you very much!