Marine Wildlife Health Surveillance in the Galápagos Islands

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Puerto Ayora, 26th November 2013

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Introduction

Galápagos human population x 6 since 1974
Nº of tourists in Galápagos x 15 since 1979

- Introduced species (cats, dogs, rats, insects, etc.)
- Emergent diseases (Distemper, Leptospirosis, etc.)
- Maritime traffic
- Pollution
- Fisheries

Increase of threats to Galápagos native wildlife

NEED FOR A HEALTH SURVEILLANCE SYSTEM

WILDLIFE HEALTH SURVEILLANCE:
- Continuous research of a population in order to detect any disease or other health issue. Passive and active surveillance.

PASSIVE HEALTH SURVEILLANCE:
- Pathologic and diagnostic studies of samples collected from injured, sick or dead animals detected ashore or afloat.
  - Goal: report diseases or abnormalities in health status.
  - Determine possible causes including emergent diseases and allows scientific base for conservation management.

ACTIVE HEALTH SURVEILLANCE:
- Direct monitoring including biological sampling and epidemiologic data collection of live animals.
  - Goal: detect and report specific diseases and/or outbreaks.

RAPID RESPONSE NETWORK (RRR):
- Coordinates actions to rapidly and efficiently attend a situation involving sick, injured or dead marine animals.
  - 24/7 during 365 days a year.

HISTORICAL HEALTH SURVEILLANCE PROGRAMS:
- Increase of wildlife health status in the last two (domestic animals-public health).
- Wildlife: ecological habitat indicators.
- Importance of HSP as management tools (Rabies)
  - ZOONOSIS!!!
- Marine mammals, sea turtles, seabirds
  - Stranding networks and epidemiological surveillance.
HISTORICAL STUDIES IN GALÁPAGOS


MARINE WILDLIFE HEALTH SURVEILLANCE PROGRAM

- Aims to establish a long-term health surveillance and monitoring of the iconic Galápagos marine species
- Aims to increase veterinary knowledge through scientific research
- Aims to provide technical advice on marine wildlife health status to the Galápagos National Park Directorate

STAGE 1:
Passive Health Surveillance through creation of the Rapid Response Network (ongoing)

STAGE 2:
Active Health Surveillance through targeted monitoring (future research)

RRN Team:
- Rapid and efficient response
- Local authority contact
- Evaluation of situation
- First aids
- Decision makers
- Inform public and media
- Care for public health
- Care for personal security

DUTIES

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Coordinators (GNPD)
- Direction
- Decisions
- Team Coordinación
- Coordination with other institutions
- Inform media

Veterinarians (CDF-GNPD)
- Responsible for animal care
- Technical advisors
- Specific knowledge in marine wildlife medicine
- Capacity building

GNPD Rangers
- Assist coordinators and veterinary team
- Represent environmental authority
- Follow coordinators guidelines
- Specific training requested

Local Volunteer Network
- Naturalist guides, surfers, fishermen
- Assist RRN team groups
- Follow coordinator guidelines
- >18 years old
- Resident in Galápagos
- Specific training requested

Manual created by CDF includes:
- RRN criteria (No interference with Nature)
- RRN operating system
- RRN elements
- Protocols for live animals
- Protocols for dead animals
- Standardized data collection forms
- Necropsy protocols
- Carcass disposal protocols
- Necessary equipment

Training Workshop about Marine Wildlife Rapid Response Network, 22-23 y 25-26 July 2013
Theoretic lectures and stranding simulations at Playa Brava, Tortuga Bay
75 trained rangers
PRELIMINARY RESULTS
(May 2011-September 2013)

- 68 RRN actions
- 43 dead animals / 22 live animals
- 28 sea lions; 10 marine iguanas; 3 green sea turtles; 13 seabirds; 2 cetaceans; 9 terrestrial birds; 3 giant tortoises

Preliminary Results
(May 2011-September 2013)

Macroscopic results:
- 25 natural causes
- 24 anthropogenic causes
- 19 unknown causes

Causes of dead in Galápagos wildlife detected by the RRN (May 2011-September 2013) (n=68)

- Anthropogenic
- Natural
- Unknown

NEXT STEPS

- Outreach campaign
- Additional RRN equipment purchase
- Care facility restoration
- Local active volunteer recruitment and training
- Active Health Surveillance

False killer whale: BOAT STRIKE?
Red-billed Tropicbird: COLLISION

Marine Iguana: DOG ATTACK

ONGOING SPECIFIC STUDIES

- September 2013: Marine iguana outbreak in Las Palmas, Santa Cruz Island.
- Vomiting and deaths. Good body condition. Macrolegsa.
- October 2013: spread to other locations
- Around 150 deaths in less than two months
- Intensive monitoring, biological sampling and necropsy performance
- Diagnostics in USA laboratories (ZooPath, UF)
- Ongoing histopathology, virology and toxicology analyses
- Main cause remains unknown until date

Necropsy findings

Good body condition
NECROPSY FINDINGS

- Glossitis
- Lung congestion
- Esophagitis/Gastritis
- Enteritis
- Stomach content (red and green algae)
- Full stomach and increase of vascularization

ACKNOWLEDGEMENTS

Loli Astudillo & Lorea Cardas

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Fundación Charles Darwin
Ciencias Marinas (BIOMAR)
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THANK YOU!!!