Western Asia Bat Research Network (WAB-Net): Promoting Conservation, Disease Surveillance, and Capacity-Building

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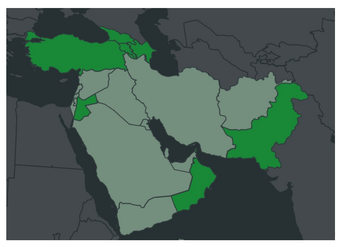
What is the WAB-Net and Why Is It Needed?

The **Western Asia Bat Research Network** (**WAB-Net**, pronounced 'wah-bee-net') is a professional network of bat biologists, virologists, and public health officials (among other experts) that promotes **collaborative bat research** across Western Asia, and enhances both **bat conservation** and **early detection of zoonotic diseases** through a **'One Health' framework**.

Defining 'Western Asia'

- The Western Asia Bat Research Network includes **20 countries**: Afghanistan, Armenia, Azerbaijan, Bahrain, Georgia, Jordan, Kuwait, Lebanon, Iraq, Iran, Israel, Oman, Pakistan, Palestine, Qatar, Saudi Arabia, Syria, Turkey, United Arab Emirates, and Yemen.



'Western Asia' as defined by our network. Countries in bright green participate in the network's 'Bats & Coronaviruses' project, described in the bottom right of the poster.

Network Structure

- WAB-Net is a **multinational network comprised of regional members** from any of the 20 Western Asian countries and **international members** conducting bat- or bat virus-focused research in the region. Currently, the WAB-Net has **>100 members from 14 Western Asian nations**, the US and the UK.

'Bats for Peace' Mission

- We believe that our multinational and multisectoral network embodies a '**bats for peace' mission** by promoting data sharing and a culture of meaningful transboundary scientific collaboration - a culture that is able to persist despite geopolitical disputes between nations in the region.

Scan me

For more information, visit **wabnet.org,** and follow us on Facebook!

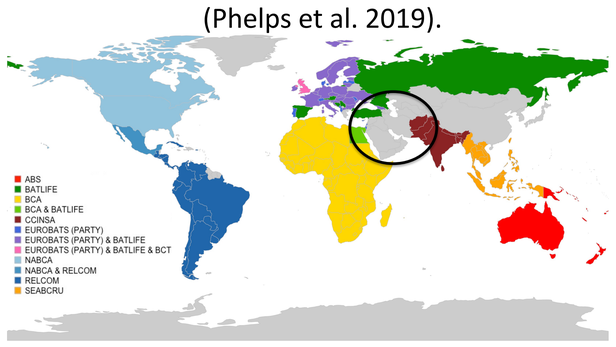
Bats **are extremely diverse** (1,400+ species globally), **highly mobile**, **ecologically and economically important** wildlife…

Rousettus aegyptiacus

…yet also **hosts of viral zoonoses** (e.g., Marburg virus, Nipah virus, Hendra virus)

Addressing Knowledge Gaps

And although bat research networks exist in most regions of the world, **bat & bat virus research in Western Asia is highly fragmented** (Phelps et al. 2019).



For these reasons, **the WAB-Net was formed, and aims to:**

Better understand the **diversity**, **distribution**, and **stability** of bat populations in Western Asia, as well as possible **bat-human interactions** and **threats** to bats in the region.

AND

Characterize bat-borne viruses, **identify risk factors that may facilitate their spillover into humans**, and collaborate with experts across Western Asia to **improve the region's ability to prevent and mitigate disease outbreaks**.

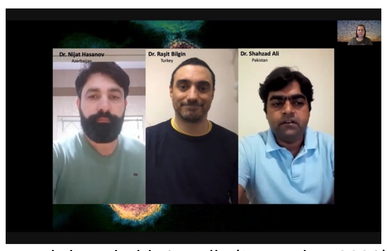
Objective 1: Professional Networking & Development

Objective 1: Facilitate interactions among bat researchers scattered across Western Asia, and between bat researchers and those conducting virus surveillance to develop a collaborative research network.

We accomplish this primarily through hosting **annual scientific workshops**

Participants of the 1st Annual WAB-Net workshop in Tbilisi, Georgia (September 2018)

Participants of the 2nd Annual WAB-Net workshop in Amman, Jordan (December 2019)



Screenshots taken from our 3rd Annual WAB-Net workshop, held virtually (December 2020)

These workshops are designed to bring network members together, for the purposes of **networking**, **information-sharing,** and **training** and **development**. Activities include:

Lectures & panel discussions

Topics have included: bat diversity/taxonomy, bat-borne viruses, bat acoustics, science communication, and community engagement, among other topics.

Group discussions

Participants discuss regional research priorities, and share best practices/challenges from their experiences in bat research.

Interactive training sessions

Participants learn how to properly don and remove personal protective equipment (PPE), a key component of WAB-Net's biosafety-minded approach to bat research.

Professional development exercises

Participants receive instruction on how to improve their grant and publication writing, as well as their science communication skills.

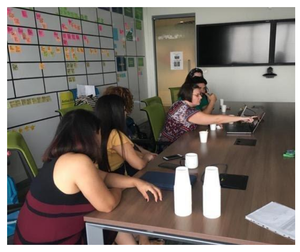
The workshops are a great way to **foster trust, collaboration, and dialogue** among network members, **improve members' overall understanding of bats and bat-borne viruses** within Western Asia, and discuss ways to **improve the sustainability of the network** (through member recruitment, procurement of funding, and increasing buy-in/participation of government stakeholders in the region).

Objective 2: Research, Capacity Building, & Outreach

Objective 2: Conduct hypothesis-driven research that integrates ecological research on bats with virus surveillance to identify "win-win" solutions that promote bat conservation and strengthen diagnostic capabilities to safeguard global health.

We accomplish this objective through…

1) Conducting **active research**, such as our **'bats and coronaviruses' project**



Pre-trip training on bat capture, handling & sampling, and biosafety/biosecurity

Untangling mist net used for bat capture

Removing bat from mist net

The aims of this project are to:

- Understand W. Asian bat diversity/distribution
- Characterize the diversity of coronaviruses
- Test key hypotheses about bat-borne zoonotic virus emergence risk in Western Asia in order to reduce the threat of infectious diseases.

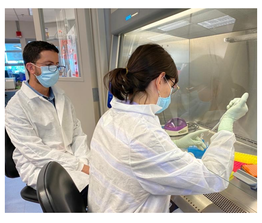
Weighing bat using spring scale

Collecting diagnostic samples

2) Communicating research results to relevant stakeholders

Results from network research will be communicated to **government officials, local populations, and the broader scientific community**, to **improve bat conservation & biosurveillance policies** that **safeguard bat populations and reduce the regional risk of bat-virus spillover.**

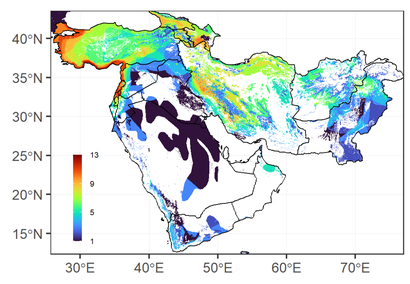
3) Improving regional capacity to conduct field-based biosurveillance, laboratory diagnostics, & data analysis



Network members perform RT-PCR testing on diagnostic samples (*left*) and receive training on Geneious bioinformatics software (*right*) as part of '**regional laboratory' exchanges**

Ongoing and Expected Network Outputs Include

- Standardized, open-access protocols on safe bat sampling and laboratory assays
- Improved regional capacity for zoonotic virus surveillance
- **Regional bat-borne coronavirus spillover risk map**
- Regional bat acoustic library
- 'Living Safely with Bats' community education toolkit tailored to Western Asia
- Peer-reviewed publications at country and regional level
- Policy recommendations for conservation and disease risk mitigation



Species distribution maps for bat species identified to host coronaviruses in Western Asia as part of the 'bats & coronaviruses' project.

Phelps KL, Hamel L, Alhmoud N, Ali S, Bilgin R, Sidamonidze K, Urushadze L, Karesh W, Olival KJ. Bat Research Networks and Viral Surveillance: Gaps and Opportunities in Western Asia. Viruses. 2019 Mar 10;11(3):240. doi: 10.3390/v11030240. PMID: 30857374; PMCID: PMC6466127.

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