

In This Issue

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SELENIUM:MERCURY MOLAR RATIOS IN FROGS

Vertebrates experience adverse effects from methylmercury, largely obtained through their food. Selenium has the potential to reduce the toxic effects of methylmercury (and vice versa). **Burger et al.** examined the selenium:mercury molar ratios in the tadpoles of Leopard frogs and Bullfrogs tadpoles and fully-formed leopard frog metamorphs. The results show that there were significant locational differences for the molar ratios of bullfrogs and leopard frog tadpoles, but there were no significant differences in metal levels between the two leopard frog species.

BEHIND BLUE DYES

In this study, **McMahon and Rohr** demonstrate that the proportion of zoospores stained after exposure to Trypan blue dye matched the proportion of expected dead zoospores in culture, verifying that Trypan blue can be used to discriminate live and dead *Batrachochytrium dendrobatidis* (Bd) zoospores. Surprisingly, Trypan blue did not differentially stain live and dead zoosporangia. This work is important because an assay that determines the viability of Bd will increase exposure consistency among experiments and laboratories, will make experiments more replicable, and will help distinguish between lethal and sublethal effects of factors on Bd.

MYCOBACTERIUM ULCERANS IN AFRICA

Mycobacterium ulcerans infection is a neglected tropical disease that creates severe and lasting morbidity in developing nations of Africa and worldwide. The transmission

pathway has yet to be discovered; however, aquatic insects have been investigated as vectors in laboratory studies. **Benbow et al.** provide the largest spatial scale description of aquatic macroinvertebrate communities associated with and without pathogen detection from those habitats. In another study, **McIntosh et al.** conducted a large-scale survey of 82 aquatic ecosystems in Ghana, Africa, to identify the potential role of aquatic plants in the ecology of this *M. ulcerans* and the devastating skin disease Buruli ulcer (BU). This study suggests that plant communities can provide substrate for *M. ulcerans* colonization and act as biological indicators of disease risk.

BAIT AND SWITCH

In this paper, **Salinas et al.** investigated which species of catfish were being used to replace capaz from the Magdalena River in Colombian markets. *C. macropterus*, a scavenger catfish from the Amazon and Orinoco, commonly known as mota or piracatinga, was most extensively used. The study also measured total mercury concentrations on these fishes and found values higher than the level recommended by WHO for human consumption

TOXOPLASMA GONDII DETECTION

Toxoplasma gondii is a globally important zoonosis and threatens the conservation of endemic species in the Galápagos Islands. Exposure to this felid parasite has been found in endangered marine birds, suggesting transmission through freshwater runoff similar to other coastal ecosystems. In this paper, **Verant et al.** present a new application of membrane filtration and epifluorescent microscopy for detection of *T. gondii* in environmental waters. *T. gondii*

oocyst-like structures were visualized but not confirmed by further analyses, highlighting the challenges of environmental pathogen detection and the need for further research to assess disease risk for wildlife and humans in the Galápagos.

MEABRS IN CHILE

The rapid increase in body size and abundance of most species inside Management and Exploitations Areas for Benthic Resources (MEABRs) has led to the proposal that these areas are a good complement for achieving the conservation objectives of Marine Protected Areas. **Aldana et al.** evaluated the effects of MEABRs on the parasite abundance of *Proctoeces lintoni* and its impact on the growth of the host limpet *Fissurella crassa* in central Chile. The parasite apparently does not exert a harmful effect on the host; however, the results suggest that the parasitism should be considered in the conservation and management of economically important mollusk.

AQUACULTURE AND HUMAN HEALTH

Burns et al. performed a scoping review of five databases that list English-language, peer-reviewed science by examining linkages between aquaculture and four determinants of health, such as poverty, food security, food production sustainability, and gender equality. Descriptive and content analysis was performed on the 156 included papers. Most research (80%) focused on freshwater finfish and shrimp production and qualitative content analysis of records revealed 11 themes. Quantitative content analysis of records and full-texts showed that there were differences in how often themes were discussed in the literature about freshwater finfish and shrimp aquaculture.

BD IN CHINA

Chytridiomycosis, caused by *Batrachochytrium dendrobatidis* (Bd), has been implicated in amphibian population declines worldwide. However, no amphibian declines associated with Bd have been reported in Asia. To investigate the history of this pathogen in China, **Zhu et al.** examined 1,007 museum-preserved amphibian specimens collected between 1933 and 2009. Bd was detected in 60 individuals (6.0%), with the earliest case of Bd infection

occurring in 1933. Bd appears to have been present at a low rate of infection since at least the 1930s in China, and no significant differences in prevalence were detected between decades or provinces.

LAKE MALAWI AND SCHISTOSOMIASIS

Over recent years, there has been an increased occurrence of human schistosomiasis in Lake Malawi. **Stauffer et al.** believed that this increase is linked to an endemic species which becoming a host in recent years and postulated that this occurred because of the introduction of other populations of schistosomes.

WNV IN THE BVIS

West Nile virus (WNV) first emerged in the U.S in 1999 and has since spread across the Americas. **Anthony et al.** report the continued expansion of WNV to the British Virgin Islands (BVIS) following its emergence in a flock of free-roaming flamingos. A single Caribbean flamingo chick was examined and found to have lesions consistent with WNV infection. Subsequent molecular analysis confirmed the presence of WNV and full genome sequence analysis revealed it to be a strain of the same virus circulating in the U.S over the past decade.

DISPERSAL BEHAVIOR IN BANDED MONGOOSES

Disease and injury can have important non-lethal impacts within a population by changing the behavior of health-compromised individuals as well as the behavior of individuals around them. One behavioral characteristic that may be impacted by health status is dispersal (permanent movement out of a social group or territory). Despite this potential link between dispersal and disease transmission, little research has been performed on whether health status affects dispersal behavior. Using data from banded mongooses, **Fairbanks et al.** explored whether health status may affect dispersal.

LIVING ON A CLIMATE CHANGED PRAYER

Climate change projections suggest that the whole Australian continent will face significant ecosystem

change in the next few generations. In rural and remote areas of the country, Indigenous Australians are engaging in new ways to strengthen their health and well being through the management of their Country. This paper by **Green and Minchin** explores this con-

nection and argues the importance of recognizing and valuing this “Healthy Country, Healthy People” connection in order to consider culturally appropriate and sustainable climate adaptation strategies for Indigenous Australians.