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PROVIDING EDUCATION AND CAMARADERIE TO PEOPLE INTERESTED IN TROPICAL AND TEMPERATE FISH AND OTHER AQUATIC LIFE

August 2 Meeting starts at 12:00 p.m. Tickets are required.



Face to face, Rio Iriri, Brazil

Coming to us from Germany—world explorer, ichthyologist, collector

HEIKO BLEHER

*Giving 2 presentations: **BIOTOPES** from 12:45 to 2:30
and **CHARACINS** from 4:30 to 6:00*

No one will be seated during Heiko's presentations



Collecting in Nira, Western Ghats, India

Pictures above from [Aquapress](http://www.aquapress.com), Heiko Bleher's website.



Hemigrammus bleheri

ATTENTION: SPECIAL AUCTION RULES FOR THIS MEETING

Why? To help pay for bringing Heiko to speak, **ANY BAG SELLING FOR \$5 OR LESS WILL BE PROCESSED AS A CLUB DONATION**; any bag selling for \$6 or more will be treated the same as always. This is the auction for selling and buying your exceptional fish and plants—those bags of fish or plants that will sell for more than \$5 (or \$100, for that matter). Due to close scheduling throughout this meeting, please bag and number your items at home or in the parking lot before the room opens at 12:00.

Heiko Bleher

For nearly half a century, Heiko Bleher has been exploring the world, searching for and identifying fish, plants, and amphibians. After visiting more than 160 countries, he knows a bit about biotopes. He has lived in Brazil, the United States, and Germany where he now lives. With yearly expeditions to the Amazon Basin, he also knows a bit about characins, many of which he introduced to the hobby. He is a prolific author, particularly well known for his work with discus; he is now publishing a series of books on different biotopes around the world. He also contributes regularly, as an ichthyologist, to professional journals. In June of this year, the Canadian Association of Aquarium Clubs (CAOAC) awarded him their Scientist of the Year designation, making him only the third recipient in 50 years. For more information on his remarkable life, see his biography on his website, <http://www.aquapress.com>.

The Irrawaddy Dolphins of Cambodia

The Irrawaddy (Ayeyarwady) dolphin is a euryhaline dolphin closely related to the Orca. The scientific name for them is *Orcaella brevirostris*. In 2005, *Orcaella* genus was split into two species, the Irrawaddy Dolphin *Orcaella brevirostris* and the Snub-fin Dolphin *O. heinsohni* (Beasley *et al.* 2002, 2005). From Bangladesh to Viet Nam, there are about 6,000 Irrawaddy dolphins. There are five recognized subpopulations, each of them IUCN Red Listed as Endangered:

- Ayeyarwady River subpopulation in Myanmar, est. 59 dolphins in 26 groups, no net increase in population since 1998.
- Mahakam River subpopulation in East Kalimantan, Indonesia, est. 59 to 79 individuals in 27 groups, with 9 newborns (sited in 2005? Report wording was ambiguous—may be from '95 to '05.) and 46 deaths between 1995 and 2005.
- Malampaya Sound subpopulation in the Philippines, mostly the inner sound, best est. 77 individuals, 2 deaths per year, with fishermen estimating 5 deaths in survey year. It is considered to be very tasty.
- Mekong River subpopulation in Cambodia from Kratie to Khone Falls, est. 69 individuals with 88 deaths over the last x years. This is the subpopulation about which the World Wildlife Federation reported in June 2009. This Showfish article deals principally with this Cambodian subpopulation.
- Songkhla Lake subpopulation in x

[Editorial comment: A note about the phrase “best estimate”—it doesn’t mean ‘the most likely to be proven accurate’ estimate, it means the most optimistic. The phrase used to mean most likely to be accurate is “plausible estimate”. The plausible estimate for the Malampaya Sound subpopulation, for example, is 45



dolphins. Another difficulty with field data is that only the data collected can be used in statistical models in an attempt to arrive at realistic figures. In the Philippine subpopulation, the observers were present for seven months and saw two dead dolphins, which became the statistic of 2 dead per year. Local fishermen told the researchers that they themselves had seen five dead dolphins that year. The researchers reported that information, but the deaths were not observed by the researchers and could not be used as verified data. Dolphins are occasionally bycatch animals in gill nets, too, but reporting bycatch dolphins can cause punishing legal problems while selling or eating such dolphins causes a good week for the fishermen's families.]

The Plight of the Irrawaddy Dolphins of the Mekong Subpopulation

In June 2009, the World Wildlife Federation (WWF) reported that the critically endangered Mekong Irrawaddy dolphins were dying at an unsustainable rate and were on the verge of extinction. There were 66 to 86 individuals left (71 by count), and 88 have died since 2003. Of the 88 deaths, 56 were neonatal calves; the percentage of neonatal calf death to adult death is rising (16 of 19 in 2006, 12 of 14 in 2007). A dolphin generation is about 15 years; they reach breeding age at six to seven years of age, gestation is 14 months, and a female will have a new calf every two to three years if things go well. And things are not going well.

In *Mortality Investigation of the Mekong Irrawaddy River Dolphin (*Orcaella brevirostris*) in Cambodia Based on Necropsy Sample Analysis*, April 2009, by Dr Verné Dove, the results of two studies were described in Khmer and English. The research team, in addition to Dr. Dove, consisted of people from around the world, as well as Richard Zanre the project manager of CMDCP (Cambodian Mekong Dolphin Conservation Project). The Cambodian Fisheries Administration and Commission for Dolphin Conservation and Ecotourism Development provided support. The WWF in Cambodia and Denmark provided logistics; these two WWF groups and Murdoch University provided funding.

The first study dealt with microbiological tests performed at the Institute Du Pasteur in Phnom Penh on samples from 11 dolphins found dead since 2007. The second study dealt with samples from 21 necropsies conducted between 2004 and 2006. These samples were subjected to testing for disease (PCR screening), histopathology, mercury, selenium, toxic environmental contaminants, and Dioxin/Furan. Genetic testing was also done. The samples from the second study were sent to laboratories in Canada and the United States.

Results of microbiological tests. The Institute Du Pasteur found that *Aeromonas hydrophila* bacterium was present in 6 of the 11 samples; three of the remaining samples had been stored frozen at temperatures that would destroy the bacterium and so could not contribute data to the bacterial test results. The last two samples came from juvenile dolphins and showed multiple infections in addition to *pneumonia* and *A. hydrophila*. *Aeromonas hydrophila* is a bacterium that causes disease in the old and the young that usually have something else that makes them an easy target for the bacterium. Scientists believe that the two juvenile dolphins would not have been so sick with so many infections if their immune system had not been compromised. *Aeromonas* does not cause death unless the host's immune system is not working properly. Typical causes of a weakened immune system are stress, immuno-toxic contaminants, pollution, or inbreeding. The disease agent *Aeromonas hydrophila* is now considered the biggest threat to the Mekong dolphin population due to the Institute's findings.

Results of contaminant tests. Immuno-toxic levels of Persistent Organochlorine Pesticides (DDT, PCB, etc.) and mercury were found in the 21 samples. Levels of DDT in the blood ranging from 22.1 to 24.4 nanograms per gram have been proven to inhibit white cell production in dolphins. Circulating levels of DDT were not measured in the 21 dolphins, but the level in their blubber ranged from 4100 to 12,000 ng/g.

An immuno-toxic level of mercury (higher than 1 ppm) was found in the liver of three of the four newborn calves sampled; the level was just barely in the toxic-level threshold. Mercury bioaccumulation is dependent on how long a body has been exposed to mercury and the level of mercury present, however, so such a high level in newborn calves does not bode well for either calves or adults.

Samples from nine of the dolphins were tested for genetic diversity. The DNA analysis showed close relationships between them, inferring a gene pool so small that it affects fertility, survivability, and disease resistance. Inbreeding depression—a situation in which a shrinking gene pool contains more and more deleterious genes as time goes on—is also a threat. (The report did not state whether or not this species of dolphin was one that could inbreed extensively without development of deleterious genes.)

Scientists believe the immune-toxic effects of the DDT plus the PCB plus the mercury are already showing an additive effect in the inexplicable and increasing number of deaths of juvenile dolphins in recent years. The scientists guess that the dolphin immune system is becoming unable to respond to disease agents and fear that the increasing deaths in very young calves may indicate the presence of inbreeding depression.