AMPHIBIAN INVESTIGATIONS FOR THE HUDSON RIVER NRDA

HUDSON RIVER NATURAL RESOURCE DAMAGE ASSESSMENT

JUNE 2008

Past and continuing discharges of polychlorinated biphenyls (PCBs) have contaminated Hudson River natural resources. While the U.S. Environmental Protection Agency is continuing with cleanup plans, federal and state trustee agencies — the National Oceanic and Atmospheric Administration, the U.S. Department of the Interior, and New York State — are conducting a natural resource damage assessment (NRDA). These Trustees are responsible for evaluating past, present, and future injuries associated with hazardous substance contamination of natural resources and determining the appropriate type and amount of restoration needed to compensate the public for their losses. Natural resource damage payments provide a means for the Trustees to restore the injured public resources to the condition they would have been in if the release of hazardous substances had not occurred, thereby compensating the public for lost services provided by those resources.

The Hudson River and its surrounding habitat support many species of amphibians which spend a large part of their lives in contact with potentially contaminated substances — water, sediment, and soil — and consume potentially contaminated prey. Amphibians, such as frogs, are essential components of the food web.

This fact sheet provides an update regarding a preliminary investigation of PCB impacts to amphibians being conducted under the NRDA.

PRELIMINARY INVESTIGATION OF AMPHIBIAN BREEDING HABITAT AND SCREENING OF BREEDING POOL SEDIMENTS FOR PCBS — 2004

As a follow-up to a 2003 preliminary investigation of bullfrog tadpoles, in May 2004, the Trustees undertook a preliminary investigation to locate wood frog and leopard frog breeding pools in the Upper Hudson River and analyze sediments from those pools for PCBs. This work was undertaken by the Trustees as part of a preliminary investigation of amphibian breeding habitat on the Hudson River to assist in determining if a full-scale study of the effects of PCBs on Hudson River amphibians should be undertaken.

Two amphibian species — the northern leopard frog (*Rana pipiens*) and the wood frog (*Rana sylvatica)* — were the focus of this preliminary investigation. There was also opportunistic collection of data on three other amphibian species — the bullfrog (*Rana catesbeiana*), the green frog (*Rana clamitans*) and the American toad (*Bufo americanus).* Field surveys were conducted during the breeding season to determine if suitably sized leopard and wood frog populations occur in the Hudson River study area for use in a larger, potential future injury study. The field surveys consisted of amphibian chorusing surveys.

To determine contaminant levels in sediments from known amphibian breeding areas samples were collected at wood frog and northern leopard frog breeding sites identified during chorusing surveys of the Hudson River. Thirteen sediment composite samples were collected from the Hudson River study area (Bakers Falls at River Mile (RM) 196.9 in Hudson Falls, New York to the Federal Dam at Troy, New York at RM 153.9). The sediment samples were analyzed for select PCB congeners, PCB homologue groups, total PCBs, and percent organic carbon.

Northern Leopard Frog *(Rana pipiens)*

CONCLUSIONS

The goal of the preliminary investigation was to determine if a full-scale study of the effects of PCBs on amphibians in the Hudson River should be undertaken. As such, the objectives of this investigation were to:

- Establish whether the Hudson River study area contains suitably sized populations of two particular amphibian species of interest — northern leopard frog (*Rana pipiens*) and the wood frog (*Rana sylvatica)* — to sample and potentially use in an injury study in the future; and

- Determine contaminant levels in sediments from known breeding areas of the northern leopard frog and the wood frog.

The total PCB concentrations (as sum of homologues) of sediments from the study sites ranged from 31.2 parts per billion (ppb) to 27,800 ppb. Based on this investigation, PCB levels in sediments from known amphibian breeding areas of the Hudson River are at ecologically significant levels, suggesting the potential for injury to these organisms. However, it does not appear that the Hudson River study area contains suitably sized populations of the target species, in particular the northern leopard frog, to use in a future field-based amphibian injury study focused solely on resident frogs. Accordingly, the Trustees are investigating additional options to assess amphibian injury, including the potential conduct of a laboratory-based injury study.

The Hudson River Trustees—assessing and restoring your natural resources

Further information on the Hudson River NRDA can be found on the following websites:

www.darp.noaa.gov/northeast/hudson/index.html

www.dec.ny.gov/lands/25609.html

http://contaminants.fws.gov/restorationplans/HudsonRiver/HudsonRiver.cfm

To add yourself to the **Hudson-NRDA listserv**:

1. Send a message to: requests@willamette.nos.noaa.gov
2. Write in the subject: Subscribe hudsonnrda

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If you have questions about natural resource damages, or want to submit a restoration project or be placed on the Hudson River NRDA mailing list, please contact one of the individuals listed below:

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