

Emergence Insect Biomass and Insect – Mediated Hg Flux from Six Ponds in NW Greenland

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1. Introduction

- Aquatic ecosystems in the Arctic are contaminated with toxic Hg originating from anthropogenic emissions – primarily coal-fired power plants and artisanal gold mines.

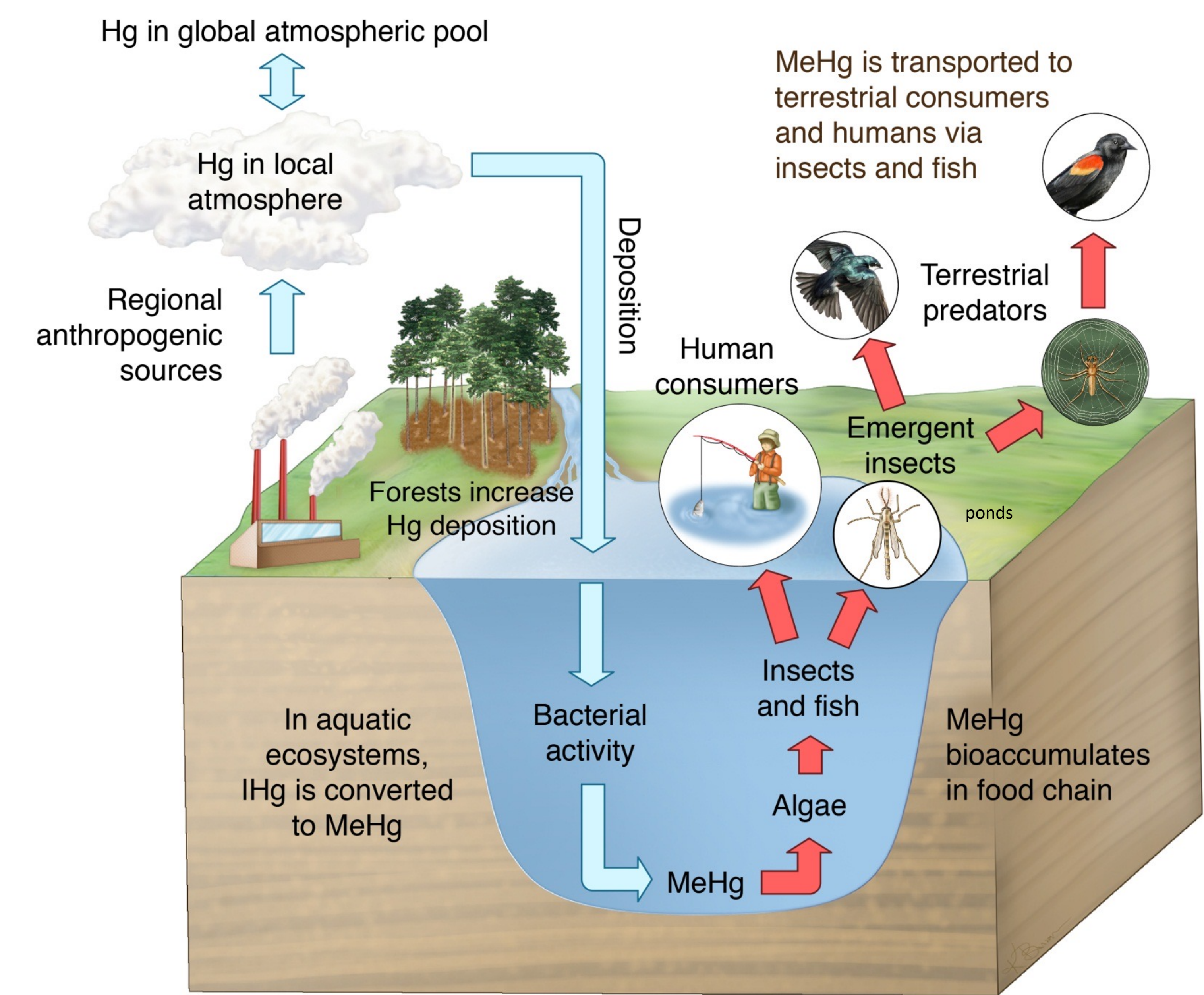


Figure 1: Global mercury cycle

- Atmospheric currents disproportionately concentrate Hg in polar regions. Following deposition, IHg can be converted to MeHg and bioaccumulate in food webs.
- Identifying levels of contamination in the base of Arctic aquatic food webs and sentinel species can help determine risk posed by Hg to wildlife.

2. Objectives

The objectives of this study were to determine: 1) emergent insect biomass from Arctic ponds 2) Insect-Mediated Hg Flux

3. Methods



Figure 3: Emerging chironomids collected with floating traps from 6 ponds.

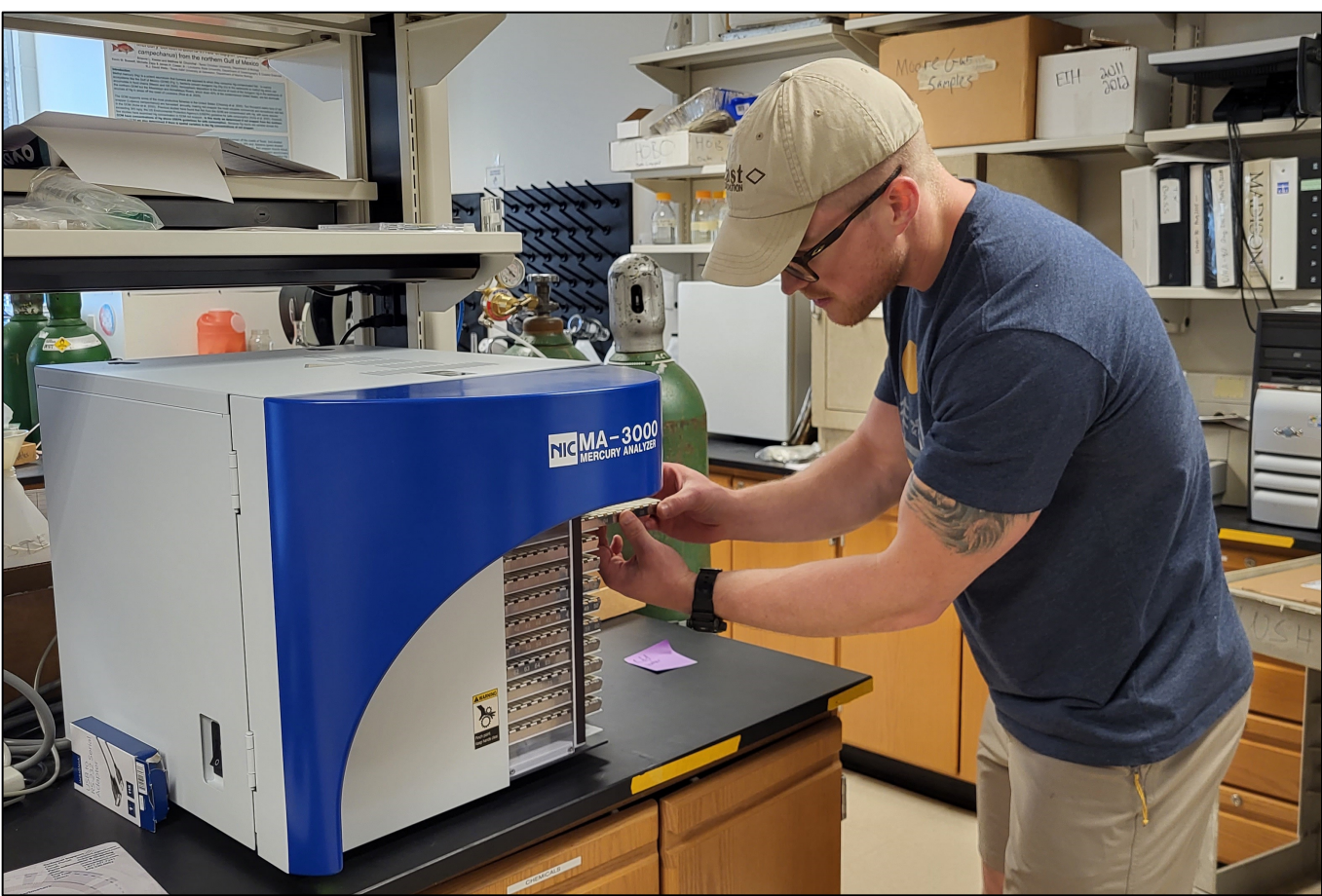


Figure 4: All samples analyzed on Nippon MA-3000

Figure 2: Study area (NW Greenland), Thule Defense Zone



4. Results

4. Results (continued)

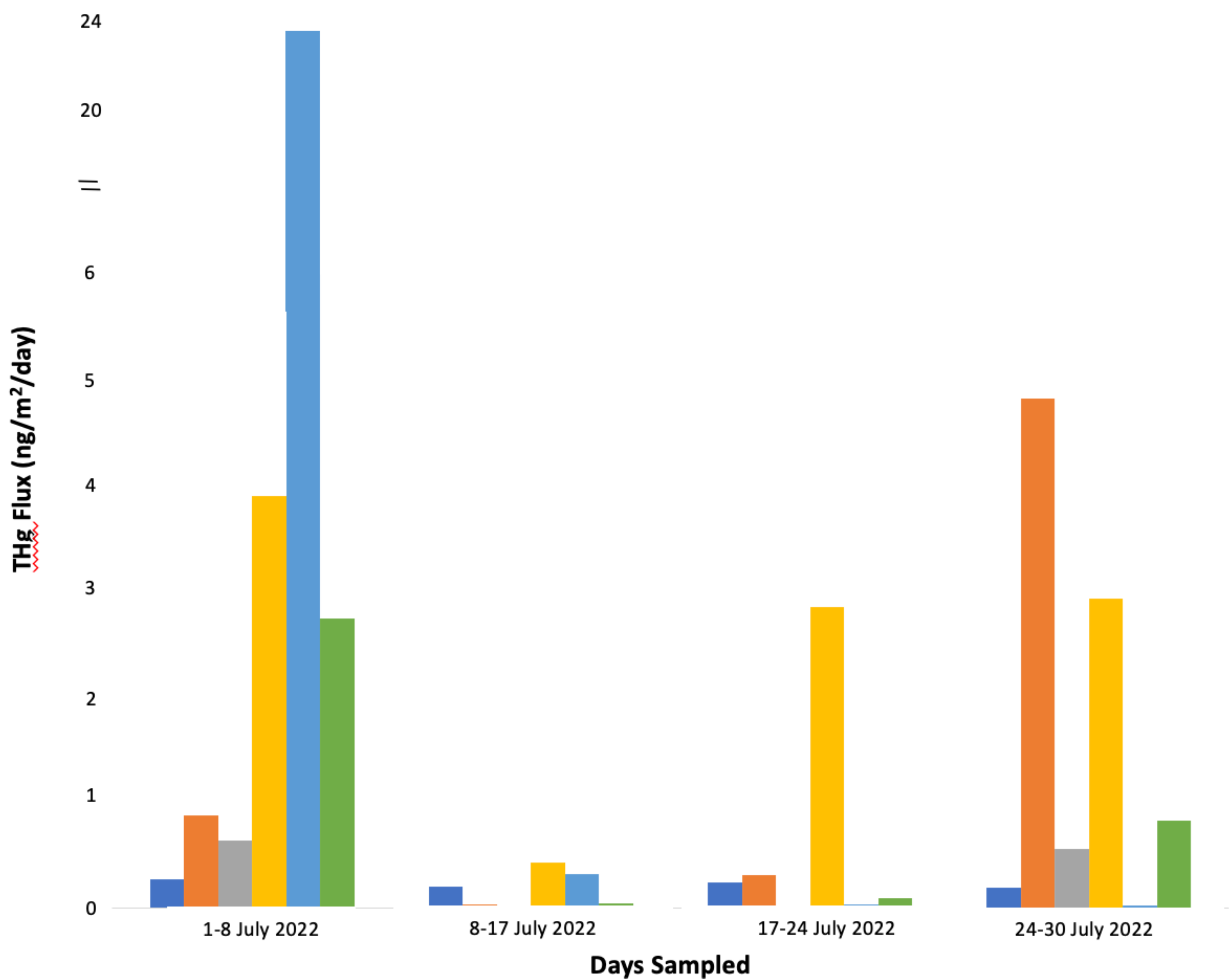


Figure 6: Total Hg flux from emergent insects during July 2022. Samples collected from 6 ponds in NW Greenland.

5. Discussion

- Emergent Insects are sentinels of Hg contamination in high Arctic lentic systems.
- Small ponds in the High Arctic are important sources of both energy and contaminants to food webs in surrounding terrestrial ecosystems .

Figure 5: Total insect biomass emerging during July 2022. Samples collected from 6 ponds in NW Greenland.