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Contaminants of Emerging Concern (2010 State of the Bay Poster)

Casco Bay Estuary Partnership

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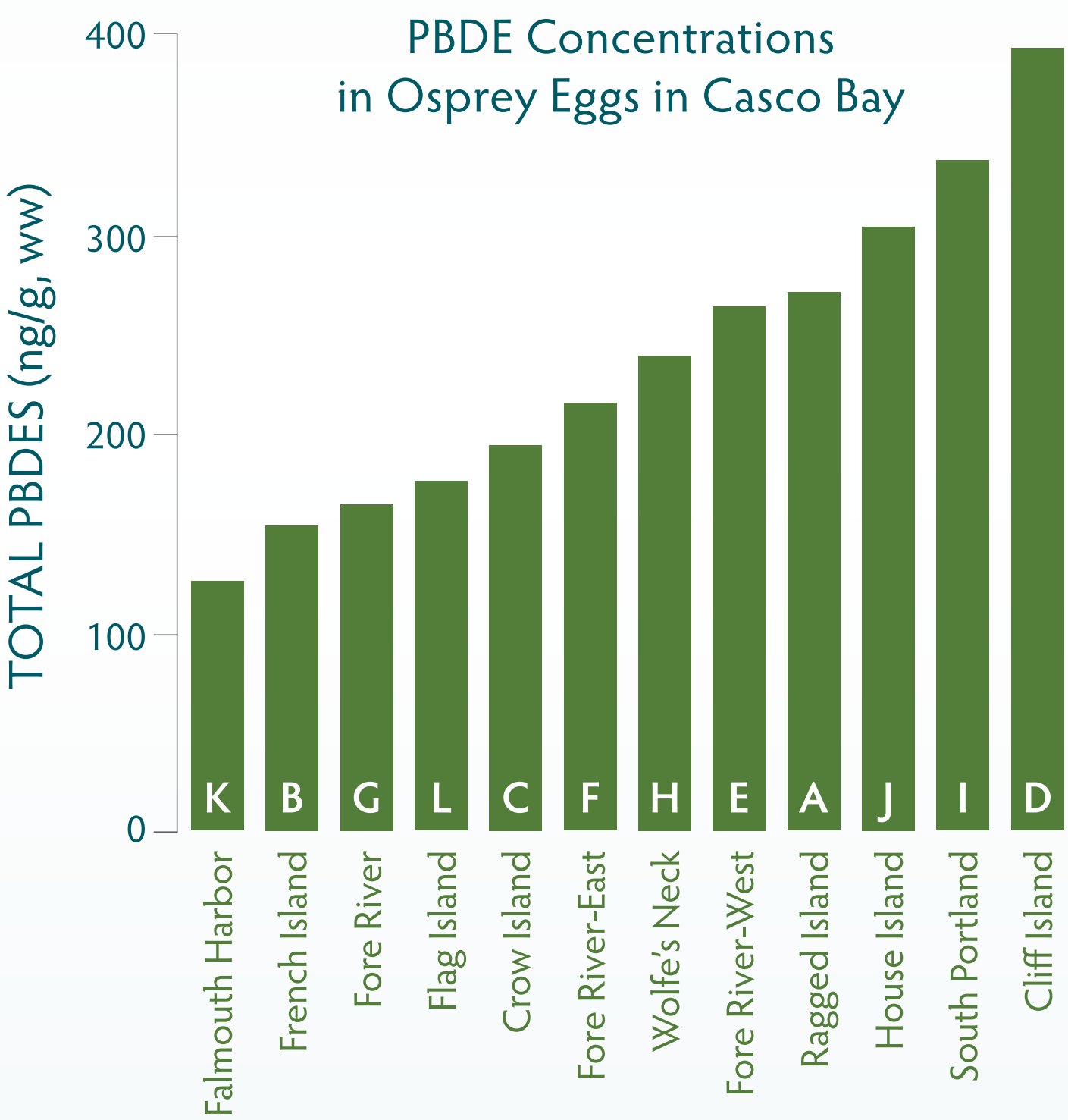
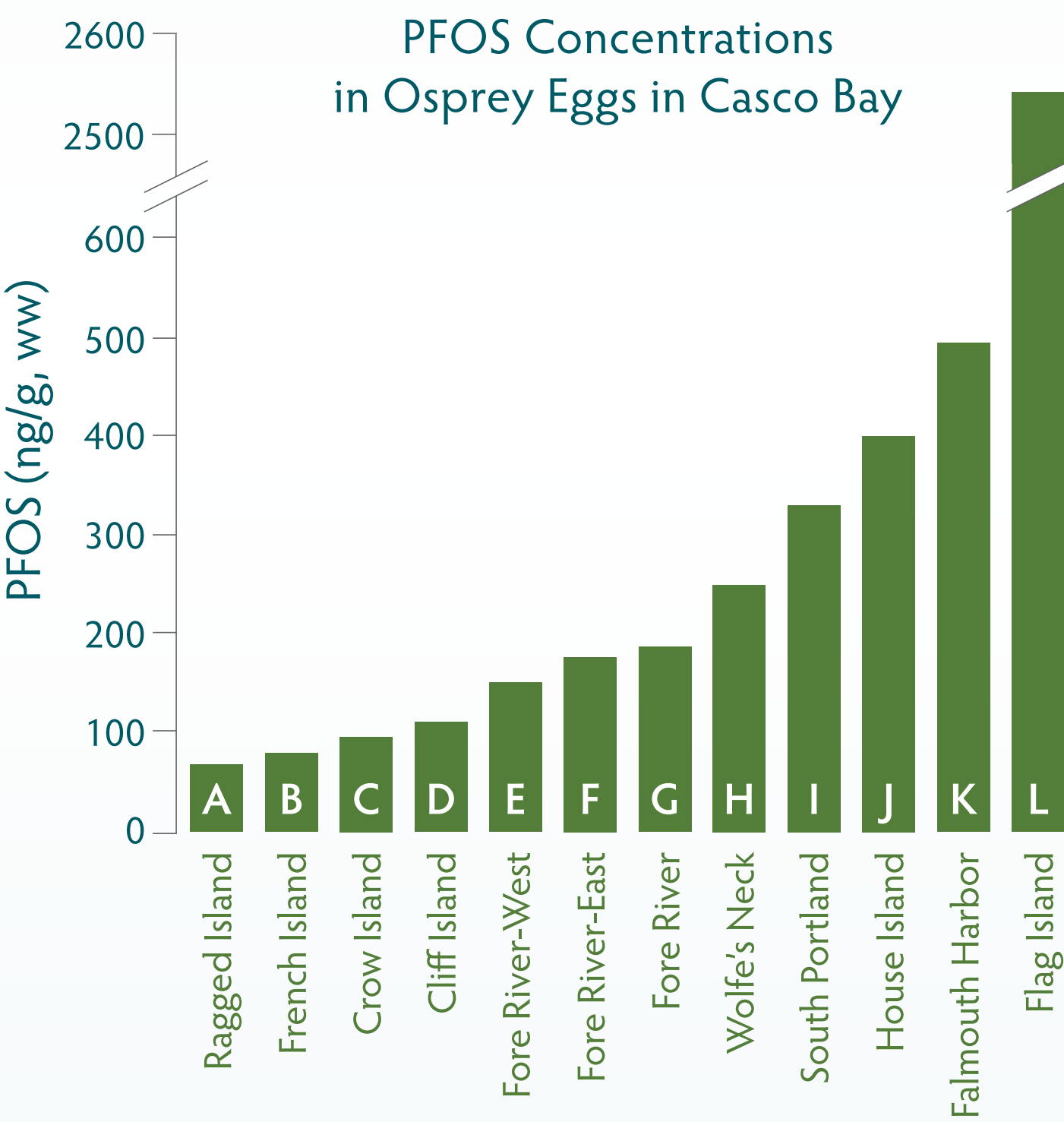
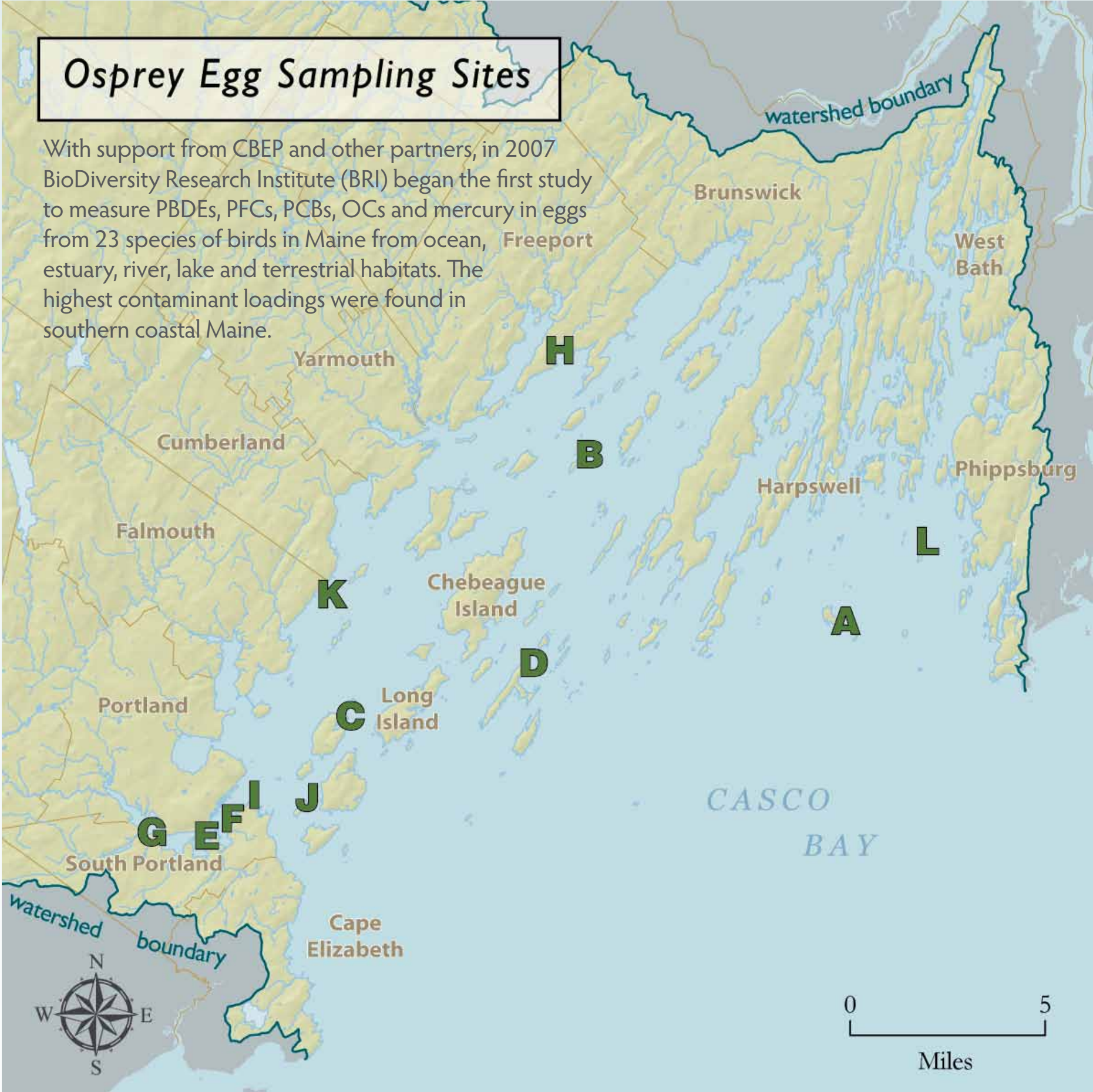
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Contaminants of Emerging Concern

Many common synthetic chemicals, which were not recognized as pollutants in the past, are now being detected in aquatic ecosystems throughout the world, where they are accumulating in the tissues of wildlife and humans. Those “contaminants of emerging concern” persist in the environment along with the more traditionally monitored persistent pollutants like polychlorinated biphenyls (PCBs), organochlorine pesticides (OCs) and heavy metals.

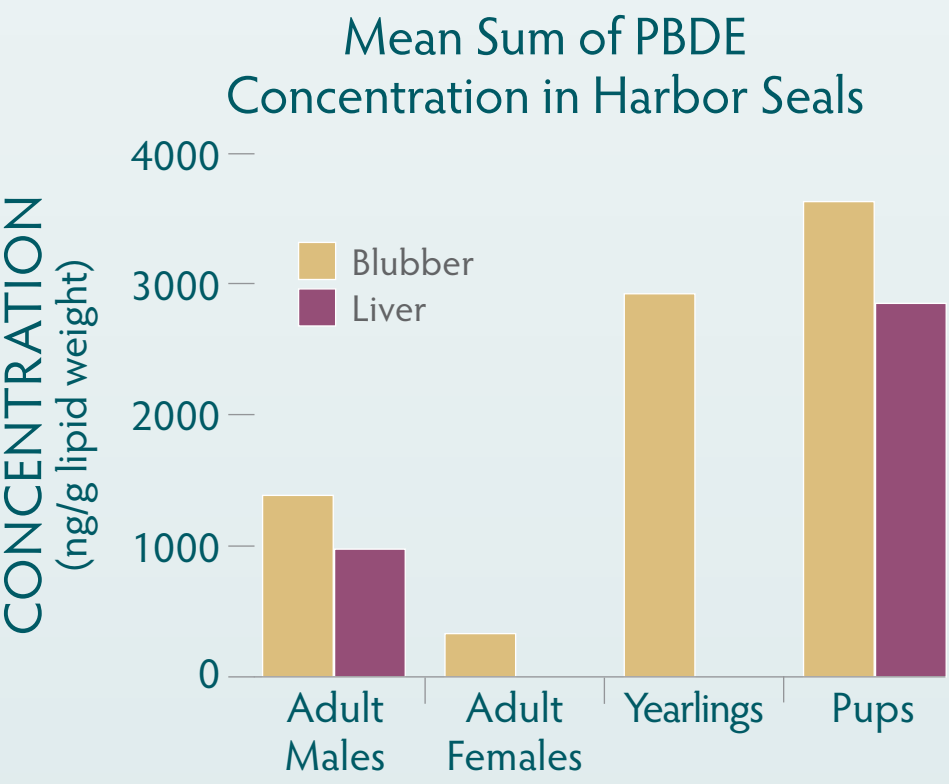
Among the new class of contaminants are **polybrominated diphenyl ethers (PBDEs)**, used as flame retardants in commercial and residential textiles, furniture foam, and electronics. Another important class of emerging contaminants is **perflorinated chemicals (PFCs)**, industrial chemicals whose common uses include stain repellents, Teflon coatings, cleaning agents, and fire-fighting foam. Two forms, **perfluorooctanesulfonate (PFOS)** and **perfluorooctanoate (PFOA)** are most common in the environment and in organisms.

PFOS and PBDE in Osprey Eggs



- PCBs, PBDEs, PFCs and OCs were found in all of the osprey eggs sampled in 2007 and 2009.
- Deca-PBDE was detected in 10 of 12 osprey eggs collected in Casco Bay.
- PFOS in an egg from Flag Island were the highest ever seen in Maine wildlife, and among the highest ever observed in a bird egg.
- Fully 75 percent of osprey eggs had PFOS concentrations exceeding the threshold for negative health effects established for chickens (100 ng/g, wet weight).
- No spatial trend was detectable among the samples, suggesting that point sources, watershed characteristics and food web dynamics may all play a role in exposure to contaminants (Goodale 2010).

PBDE and PFC in Seals



Since 2001, the Marine Environmental Research Institute (MERI) has conducted a long-term investigation that analyzes the levels and effects of environmental pollutants in harbor seals (*Phoca vitulina concolor*) along the northwest Atlantic coast. To date, the study has measured 395 compounds in 487 tissue samples from 181 stranded and live seals from Canada to Long Island, New York, including Casco Bay. As shown in the graphs, the study found high levels of contaminants of emerging concern, including PBDEs and PFCs, in harbor seal tissues.

