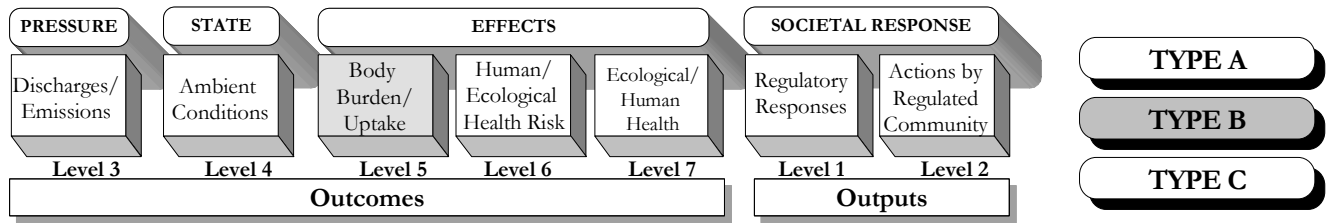


ECOLOGICAL HEALTH MAJOR ECOSYSTEM FUNCTIONING



Indicator: PCB Levels in Mid-Atlantic Estuarine Blue Crabs

The presence of toxic substances and pesticides has the potential to disrupt the functioning of entire ecosystems. In the past, tracking chemical loadings on an ecosystem-wide basis was not common. However, many ecosystem-wide monitoring programs are now underway. An example of this is the Mid-Atlantic Integrated Assessment (MAIA). MAIA is a research, monitoring, and assessment program whose main objective is to develop high-quality scientific information on the condition of the natural resources of the Mid-Atlantic region of the eastern United States. The study area includes all of Pennsylvania, Maryland, Delaware, Virginia, West Virginia, and the District of Columbia, and parts of New Jersey, New York, and North Carolina. The Mid-Atlantic is a diverse area with major ecosystems ranging from estuaries to coastal plains to mountains. It is also an area with many areas of dense population that place considerable stress on ecological resources.

also makes them well suited for long-term ambient monitoring. This indicator measures PCB levels in blue crabs from estuaries in the Mid-Atlantic region.

At this time, Blue Crab data is currently available for the Carolinian Provinces from 1994 to 1997. Data from other provinces is in the process of being added to the database. However, summary data files are not available for the MAIA. The available data is disaggregated according to province, chemical and testing station. Due to the analytical complexity required to summarize this data in a manner that would lend itself to presentation as an indicator, this indicator is considered to be a *Type B*.

Data Characteristics and Limitations: Region 3 and the Office of Research and Development (ORD) of the U.S. Environmental Protection Agency are working jointly on an ecosystem-based evaluation of this region and its watersheds – the Mid-Atlantic Integrated Assessment (MAIA). The program draws upon the resources of a number of other local, state and federal programs to assemble a regional environmental monitoring assessment system capable of meeting a range of scientific, planning and management needs. Through its partners a rich array of data is available to develop measurement tools. Such partners include: the Environmental Monitoring and Assessment Program (EMAP), the mid Atlantic Highlands Assessment, the National Biological Service's Gap Analysis Program, the Chesapeake Bay Program, the Delaware Estuary Program, the Virginia Coastal Bays Program, the U.S. Geological Survey's National Water Quality Assessment Program, the Forest Service's Forest Inventory and Analysis Program, and the National Oceanic and Atmospheric Administration's Coastal Change Analysis Program. Specific indicators have yet to be developed, but the near-term potential for this program to provide a strong system is good.

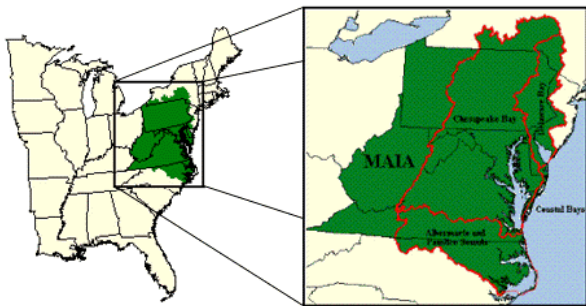


Chart: U.S. Environmental Protection Agency (<http://www.epa.gov/maia/>)

A class of pollutants that is introduced into the environment through run-off from urbanized areas are PCBs. Because of this, they are of particular concern in the Mid-Atlantic region. PCBs are a small family of industrial compounds that are environmentally persistent and bioaccumulative (Francis 1994). PCBs have been linked to reproductive problems in turtles (Bergeron et al. 1994), developmental malformations in birds (Francis 1994), and reductions in the photosynthetic activity of plants (Doust et al. 1994). They are good representatives for many of the toxic organic compounds from anthropogenic sources because they comprise a variety of common substances which display a range of physical and chemical properties. This

References

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