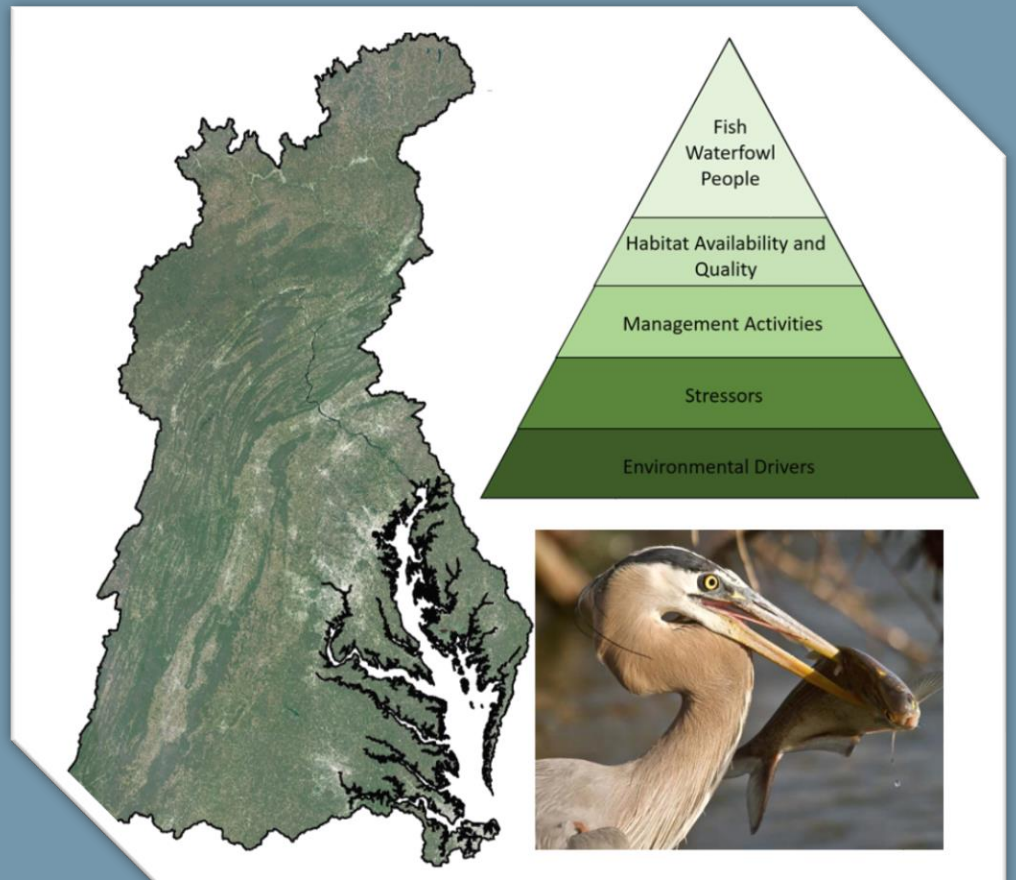
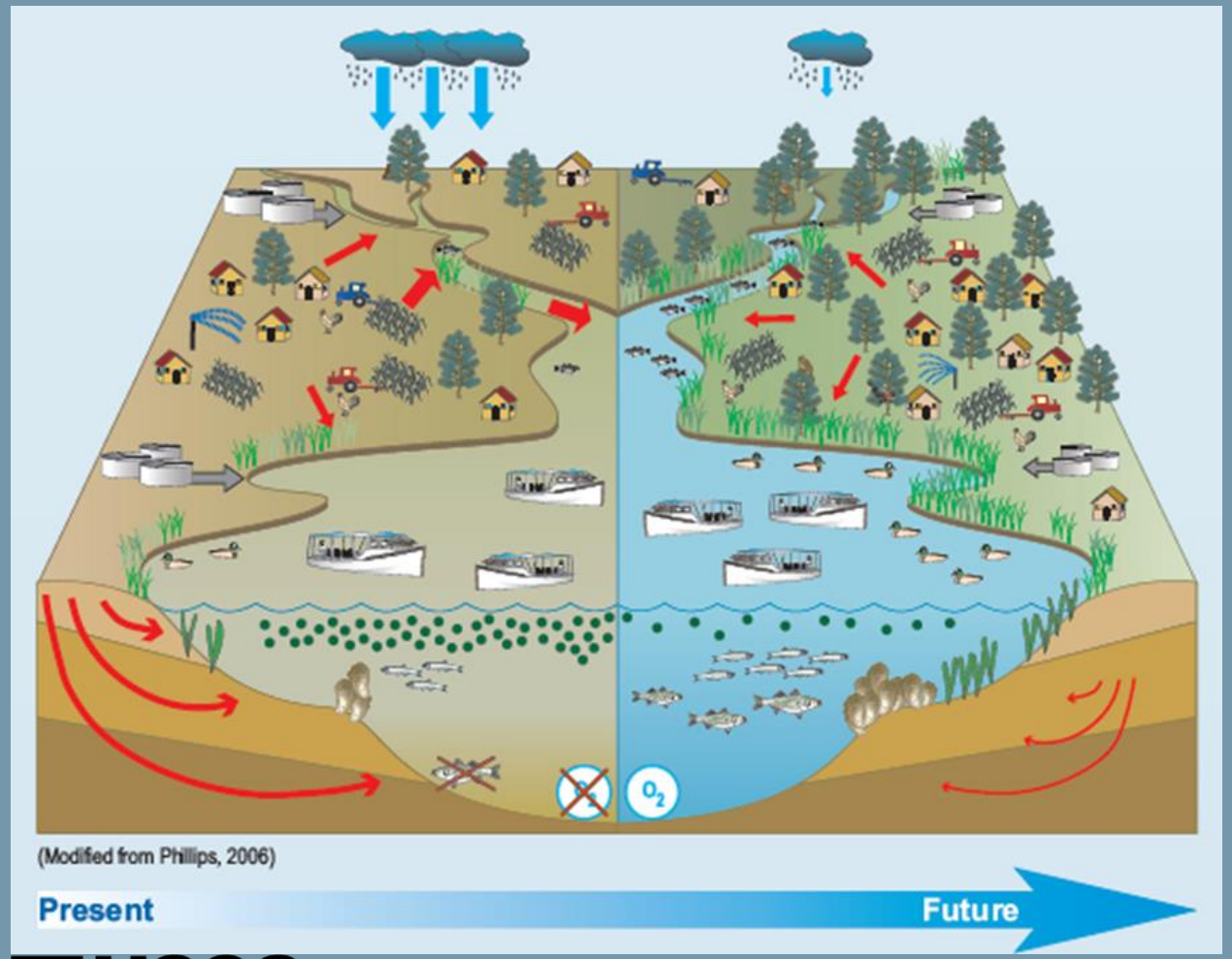
USGS Chesapeake Themes and Multi-year Work Plan



Scott Phillips
USGS Chesapeake Bay Coordinator

CBP Management Board meeting
Sept, 2019

USGS Chesapeake Studies: Providing Science and Evolving for the Future



USGS Role and Contributions:

- Monitor conditions….assess progress
- Explain ecosystem change…focus and evaluate management approaches
- Forecast…..emerging issues
- Translate science…inform difficult decisions

TMDL Midpoint assessment:

- 2010-2025
- New water-quality insights
- Informing state implementation plans

Evolving USGS Science:

- Fish, waterfowl, and people
- Integrated science to address complex issues

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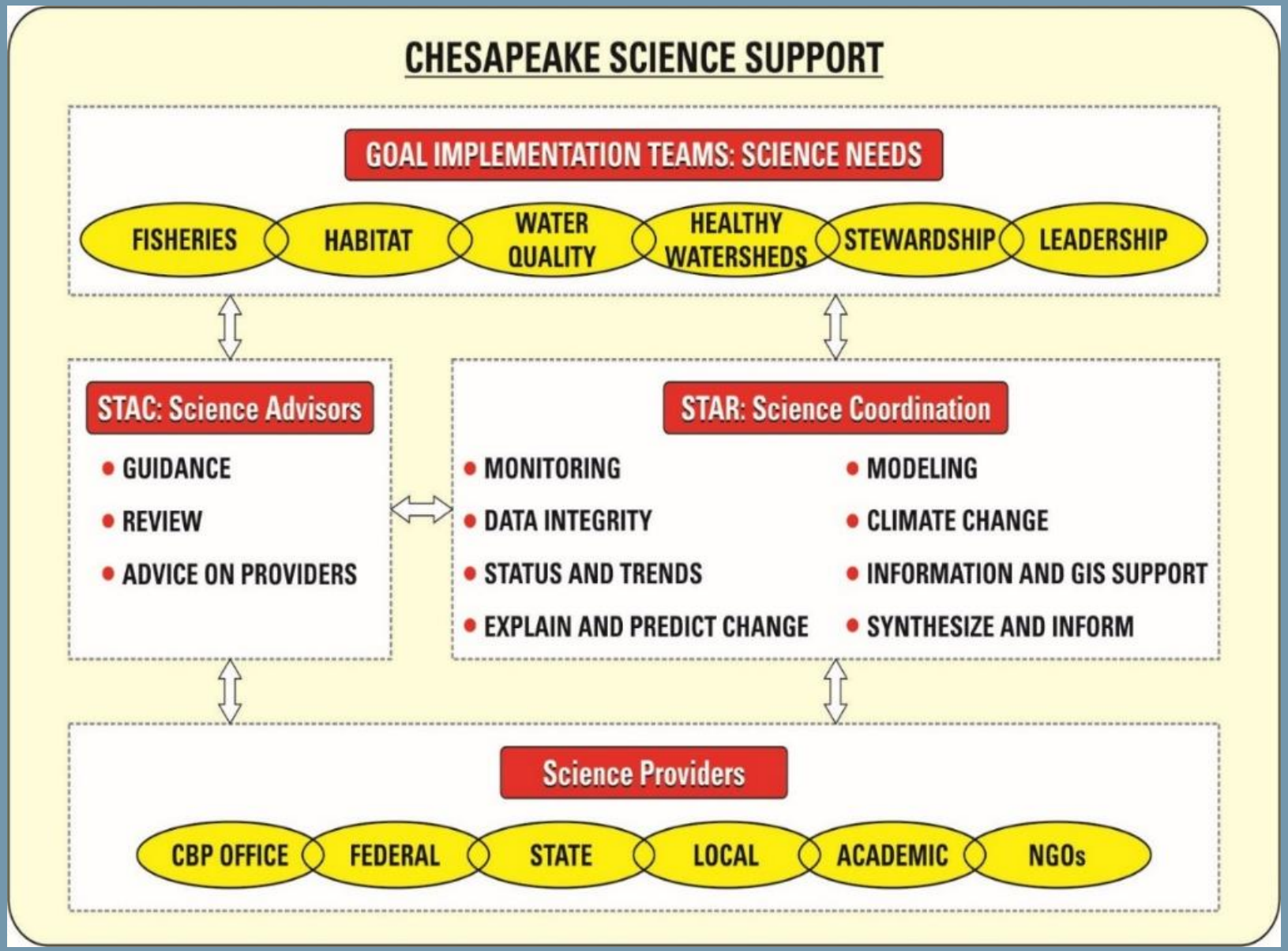
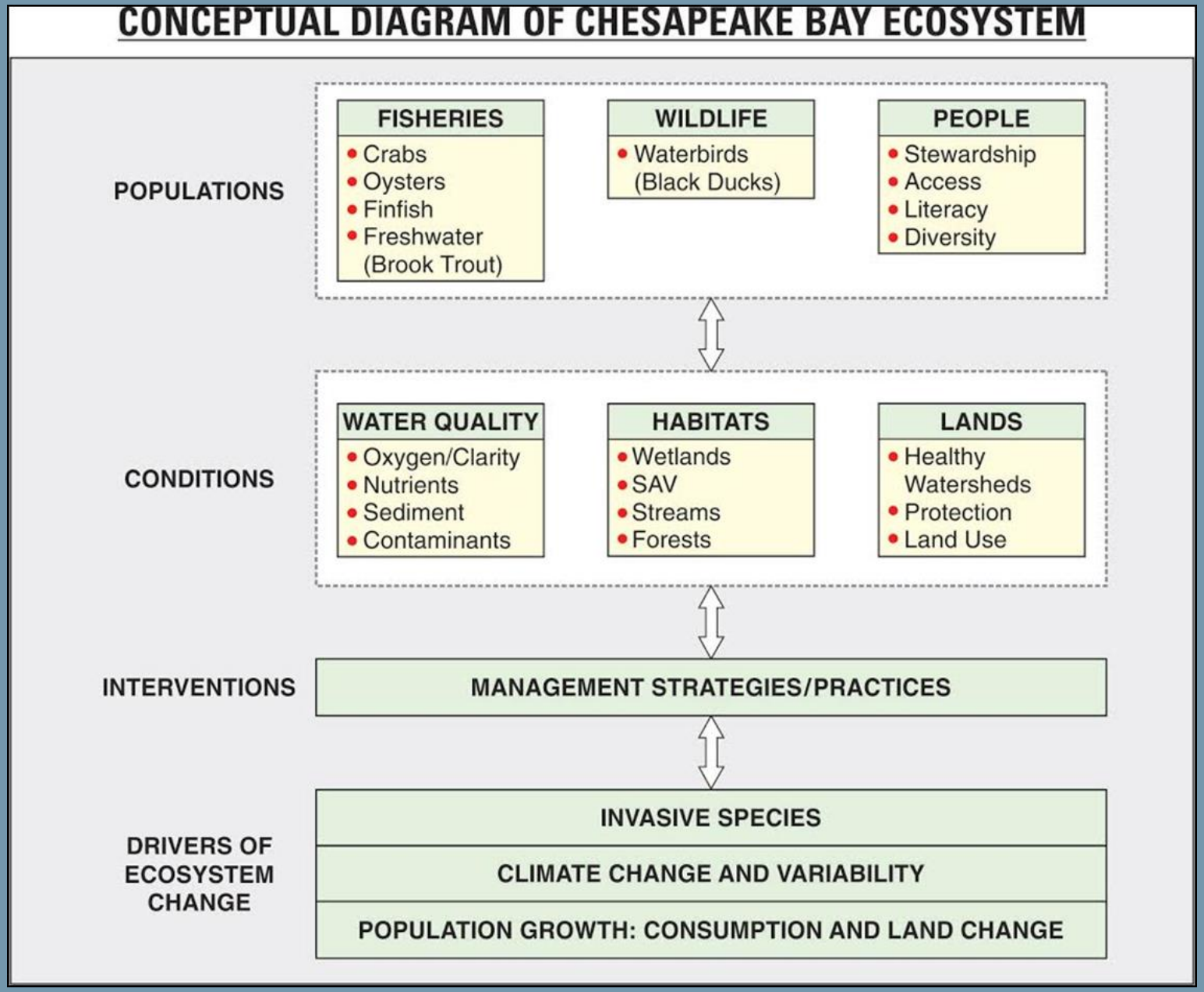
Assessing Science Needs

- **Chesapeake Bay Watershed Agreement**
  - Goals and Outcomes
  - Sciences needs from Goal Teams
  - SRS
  - Strategic Science and Research Framework
- **DOI and USGS priorities**
- **Two-year process**



USGS Chesapeake Needs and Science Themes



USGS Themes:

1. Fish habitat, health, and aquatic conditions
2. Coastal habitats and waterbirds
3. Land change and watersheds
4. Integrate and engage stakeholders

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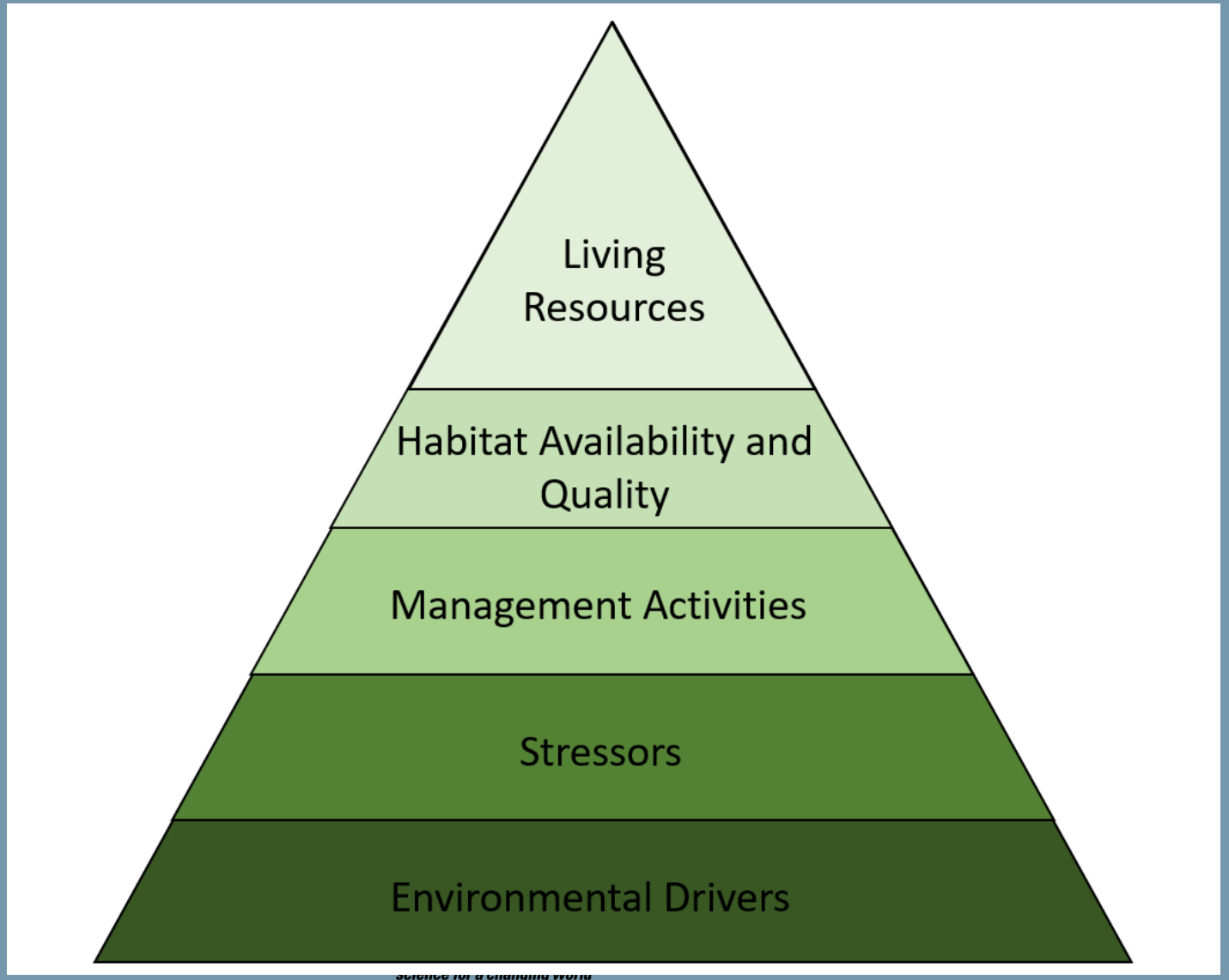
Theme 1: Fish Habitat, Health, and Aquatic Conditions

CBP:

- Fish habitat
- Stream health
- Brook trout
- Fish passage
- Toxic contaminants
- Water quality

DOI/USGS:

- Biological threats (invasive species, disease)
- Fish health
- Aquatic conditions



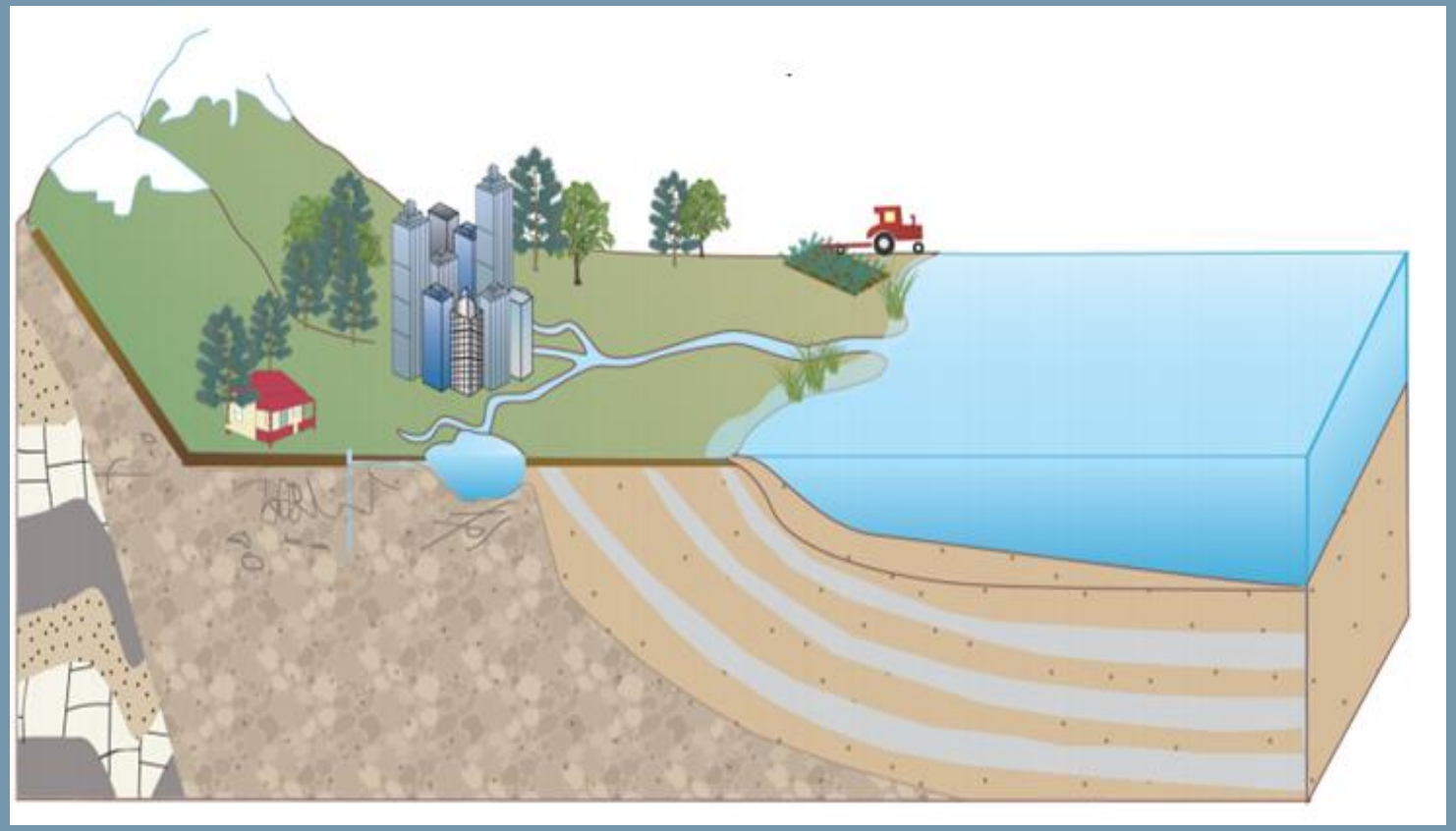
USGS-NOAA Collaboration for Fish Habitat

Habitat Settings:

- Cold headwaters
- Streams and Rivers
- Tidal Fresh
- Estuary

USGS Efforts in watershed

- Conditions and factors
- Explain changes
- Status and trends
- Aquatic conditions



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USGS Fish Habitat and Aquatic Conditions

Streams and Rivers

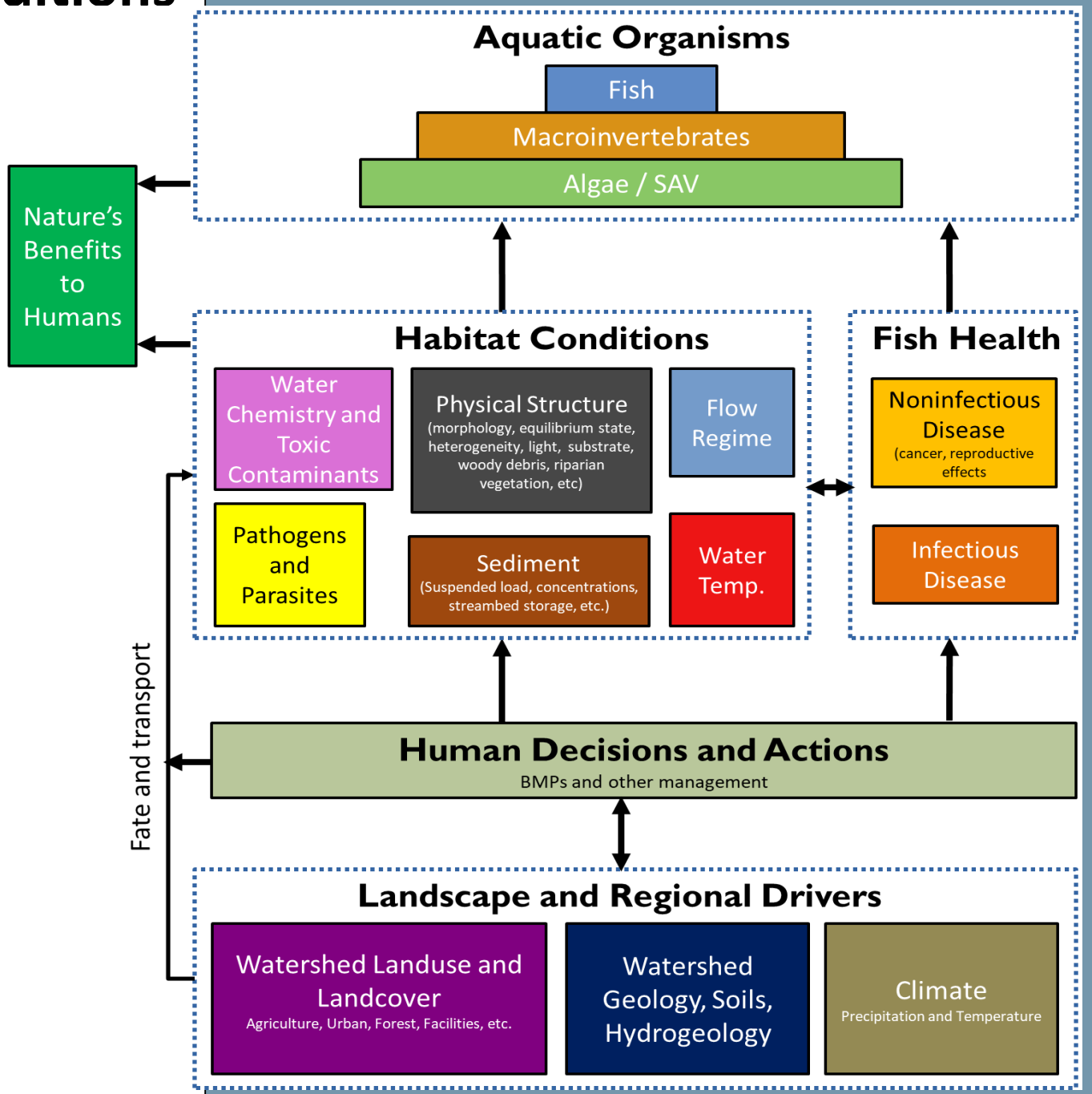
- Stream conditions & fish habitat
- Flow and temperature
- Nutrient, Sediment, Contaminants
- Response to BMPs
- Fish health, disease, QW

Cold headwaters

- Temperature, climate, groundwater
- Monitoring design
- Passage and culverts

Tidal freshwater/estuary

- Water quality changes
- Invasive species
- NOAA-USGS watershed-estuary pilot



Theme 2: Risks to Coastal Habitats and Migratory Waterbirds

Coastal habitats and DOI lands

CBP:

- Wetlands, SAV
- Climate resiliency

DOI/USGS:

- Assess risks to coastal habitats
- FWS Refuges, NPS lands

Migratory Waterbirds

CBP: Black Duck

DOI/USGS:

- Atlantic flyway & 1M wintering waterbirds
- Multiple migratory species
- Factors affecting habitat & food sources
- Biological threats

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USGS: Risks to Coastal Habitats and Migratory Waterbirds

Risks to Coastal Habitats & DOI Lands

- Factors affecting nearshore habitats
- Forecast marsh migration, coastal vulnerability & response
- Relation to waterbird habitats

Migratory Waterbirds and Habitats

- Waterfowl distribution
  - Multiple species and black ducks
  - Benthic and SAV abundance
- Avian influenza and biological threats

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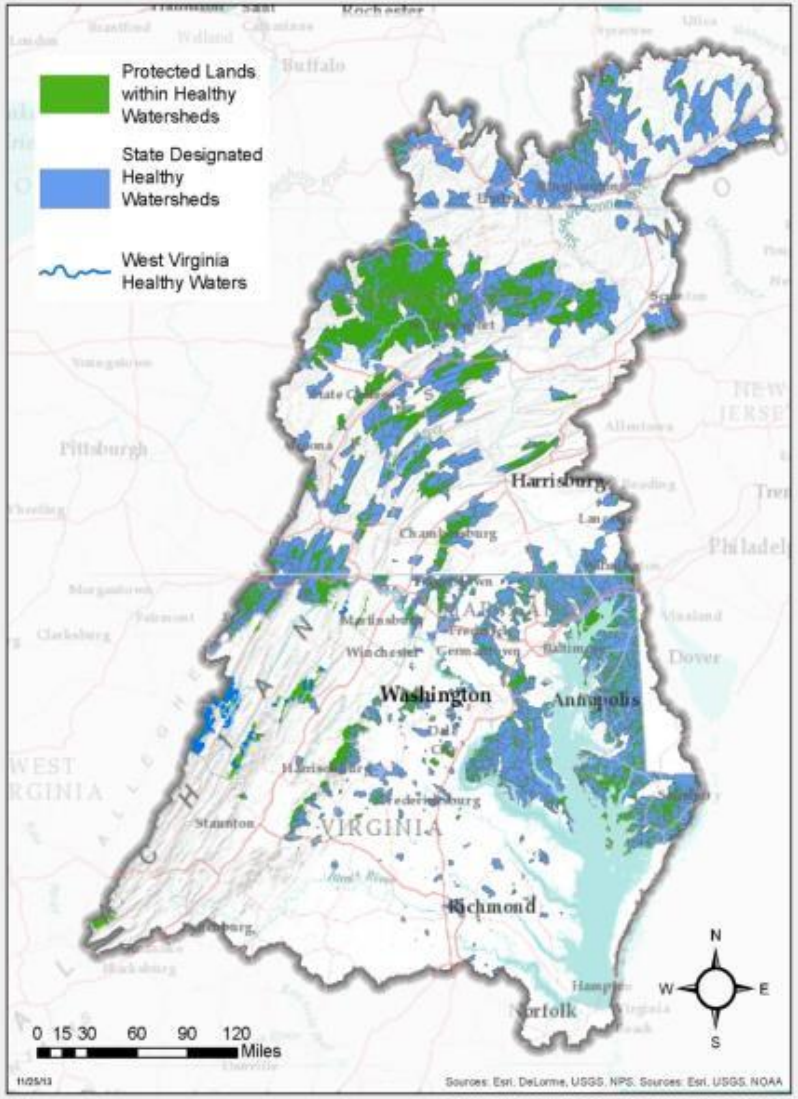
Theme 3: Land Change and Watersheds



CBP:

- Healthy watersheds and streams
- Land protection
- Public access
- Land use

DOI/USGS:

- Forecasting land change
- Landscape characteristics
- Protection/drinking water

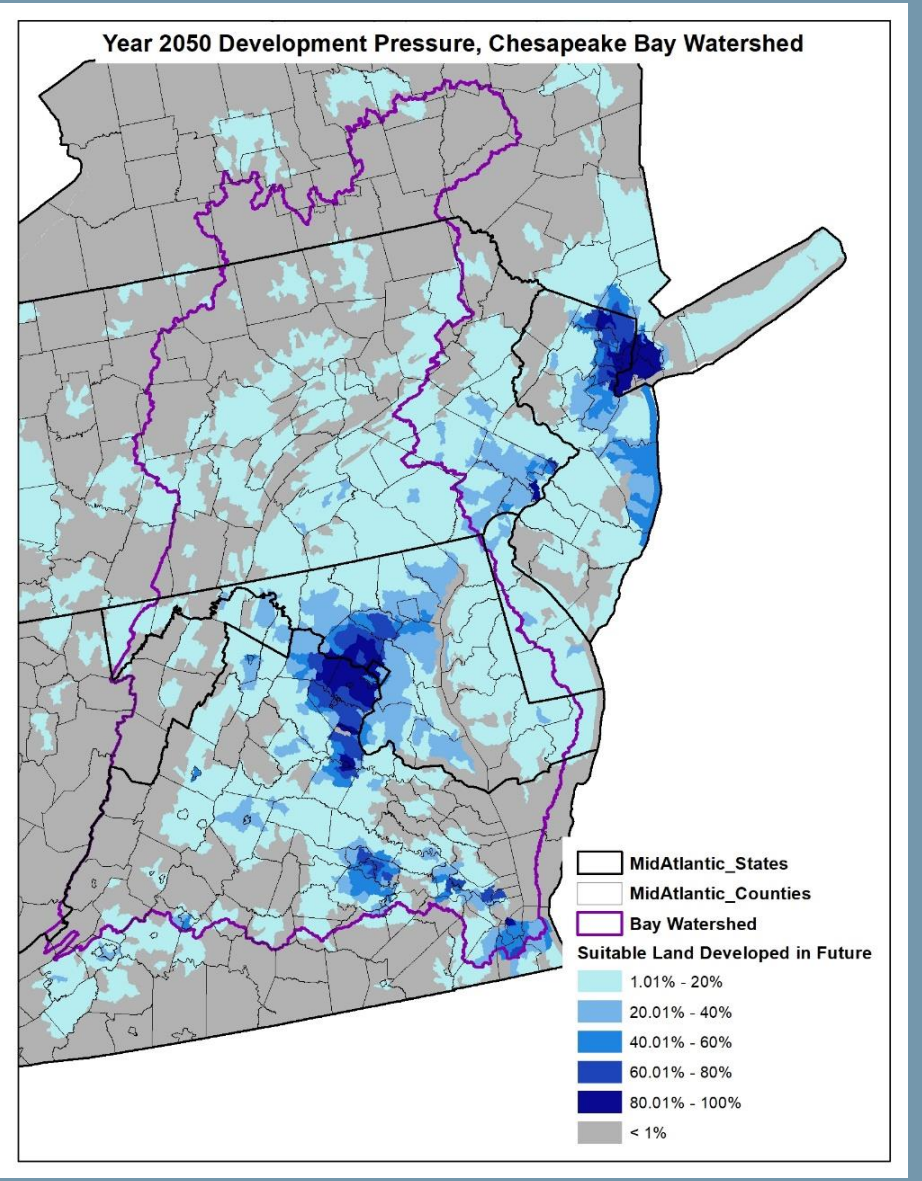
Theme 3: Land Characterization and Change to Assess Vulnerability

Improve land characteristics information

- Stream conditions
- Monitor land cover/use change
- Land management and BMPs
- Forecast changes

Explain characteristics affecting vulnerability and resilience

- Assess risk factor and vulnerability
- Watershed characteristics and stream health
- Inform planning and land protection actions



Chesapeake Bay Land Change Model v3a

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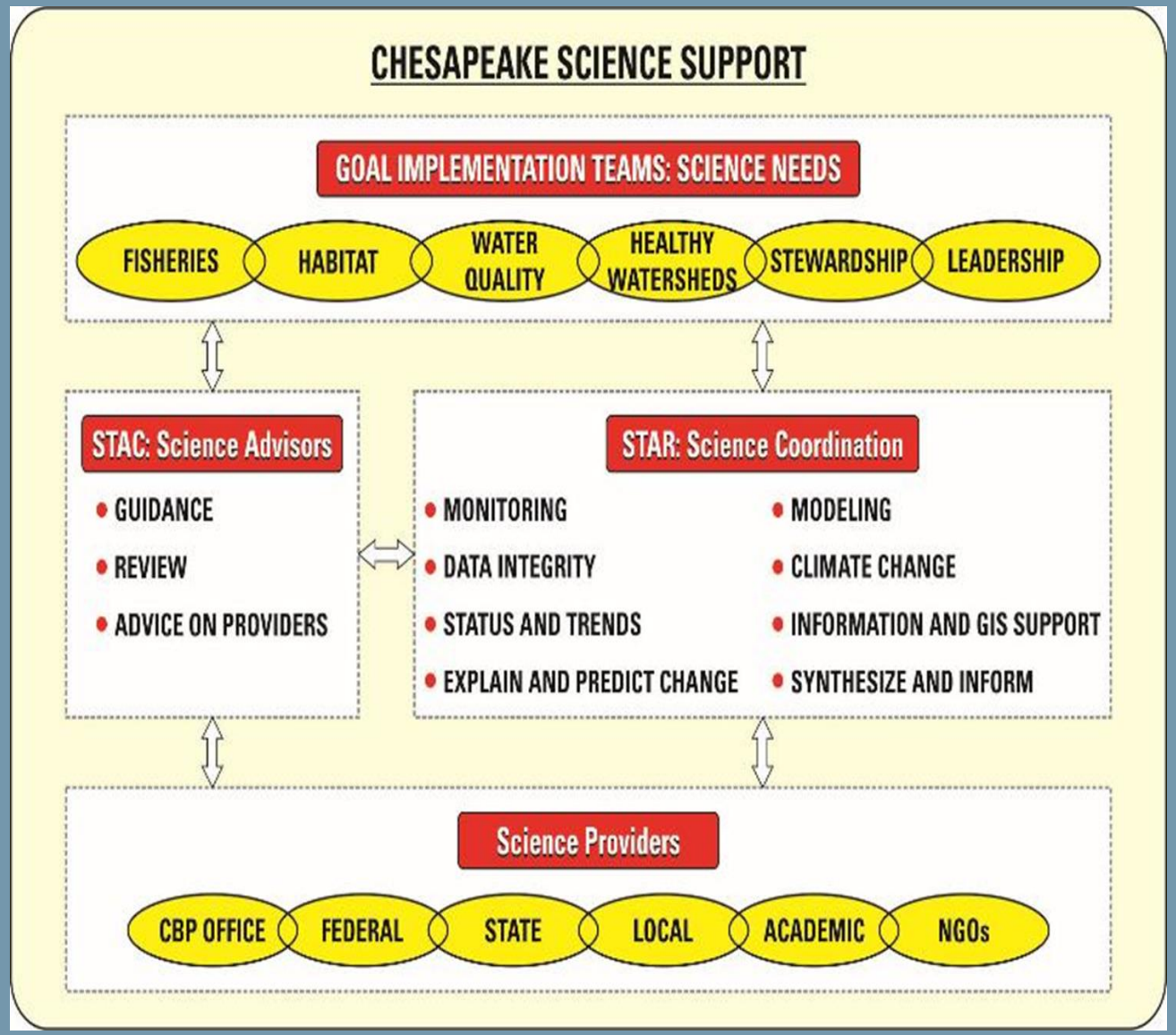
Theme 4: Integrate Science and Engage Stakeholders



Importance & Issues

- Inform decisions for goals

Science Integration

- Collaboration: partners & USGS
- Leverage resources

Data sharing

- New USGS directions
- CBP efforts

Translate science and engage stakeholders

- CBP Goal Teams
- Co-produce materials
- Tools and multiple benefits

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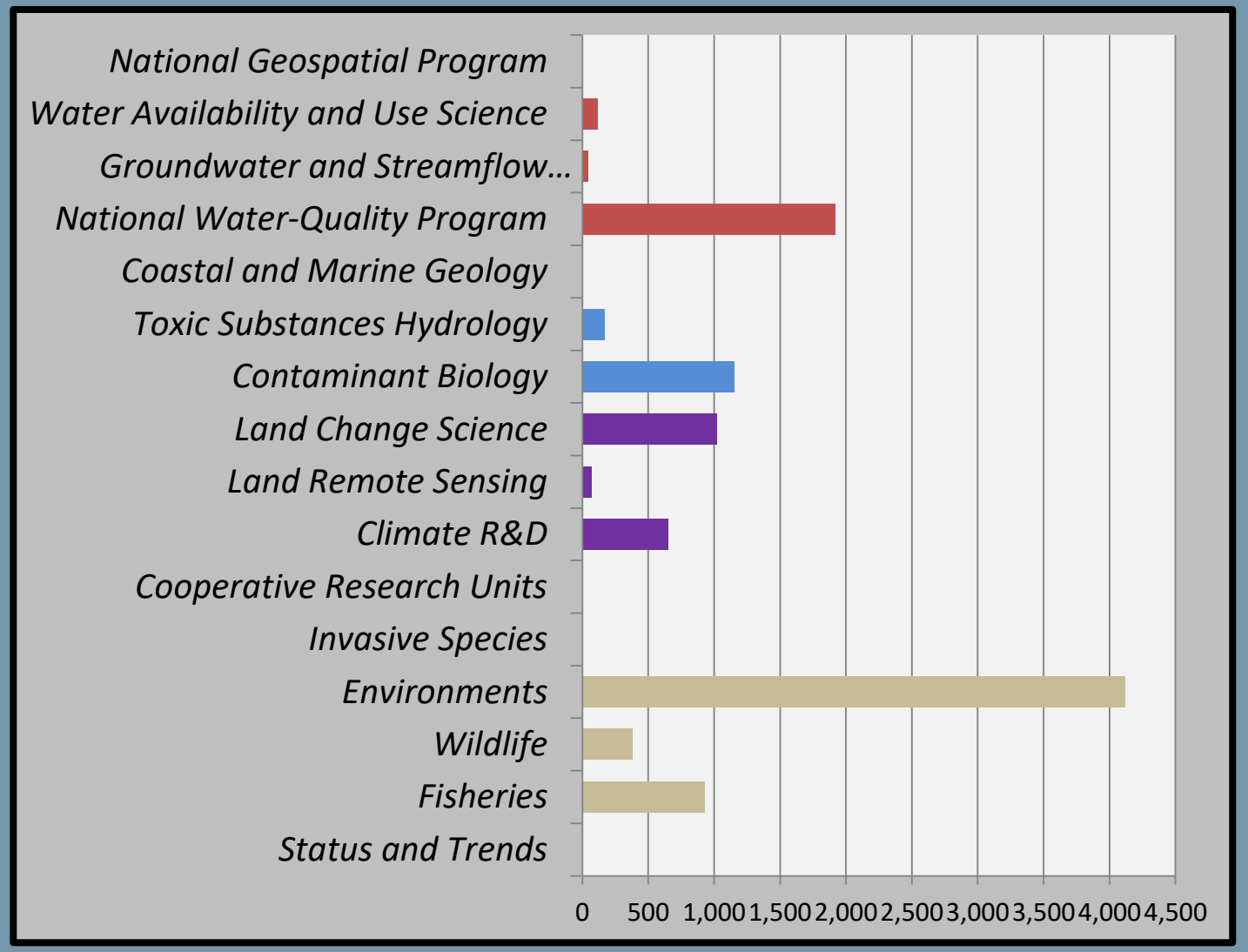
Leveraging USGS Resources for Chesapeake Efforts

- Multiple sources of funds: $23M
- USGS:
  - Mission Areas and programs: $13M
  - Most are obligated to specific projects or monitoring
  - PES: More flexible for stakeholder needs and integrated science
- Reimbursable
  - $10M
  - Mostly for water monitoring



Next Steps and Contacts

- USGS finalize science directions for 2020-2025
- Tasks updated annually

- Contacts:
- Scott Phillips (swphilli@usgs.gov)
- Ken Hyer (Kenhyer @usgs.gov

- More information: https://www.usgs.gov/centers/cba