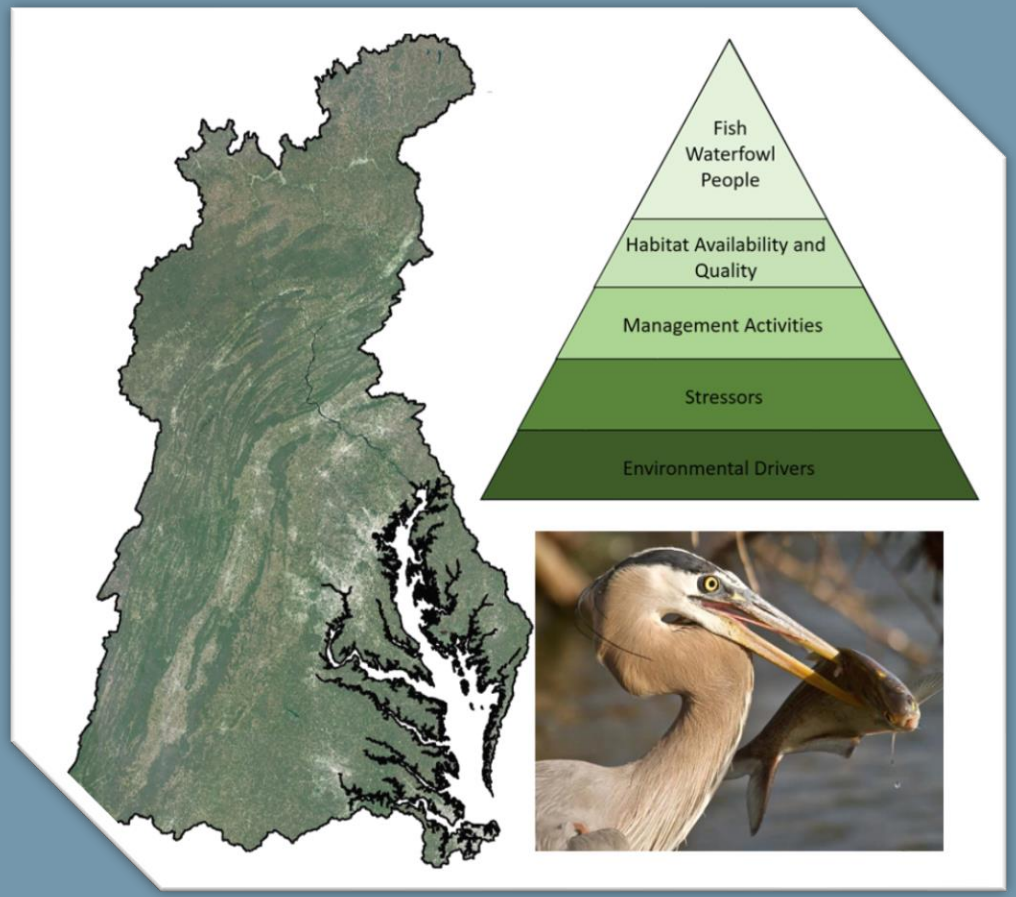
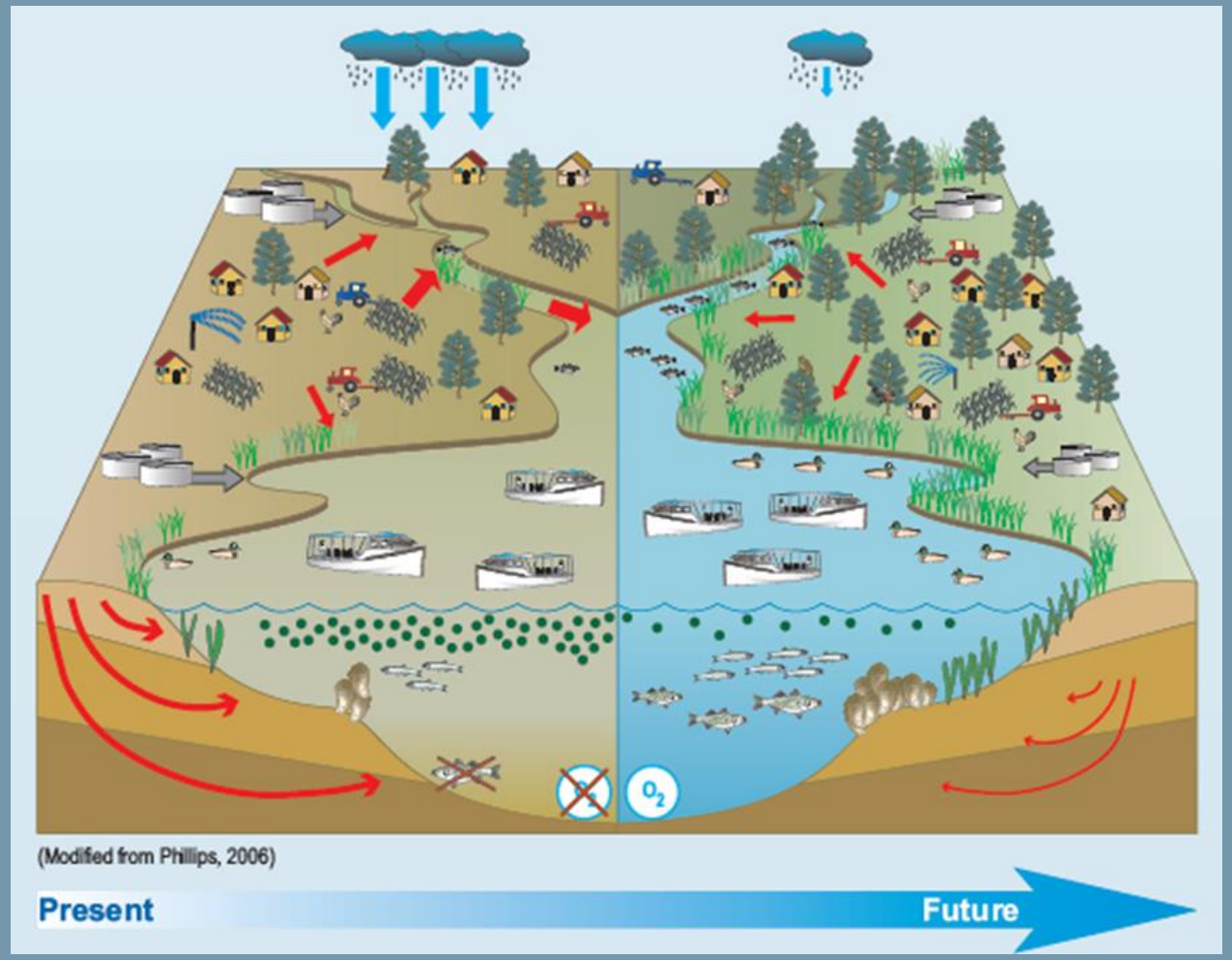
USGS Chesapeake Themes and Multi-year Work Plan



Ken Hyer and Scott Phillips
USGS Chesapeake Bay studies

Maintain Healthy Watersheds GIT
October 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

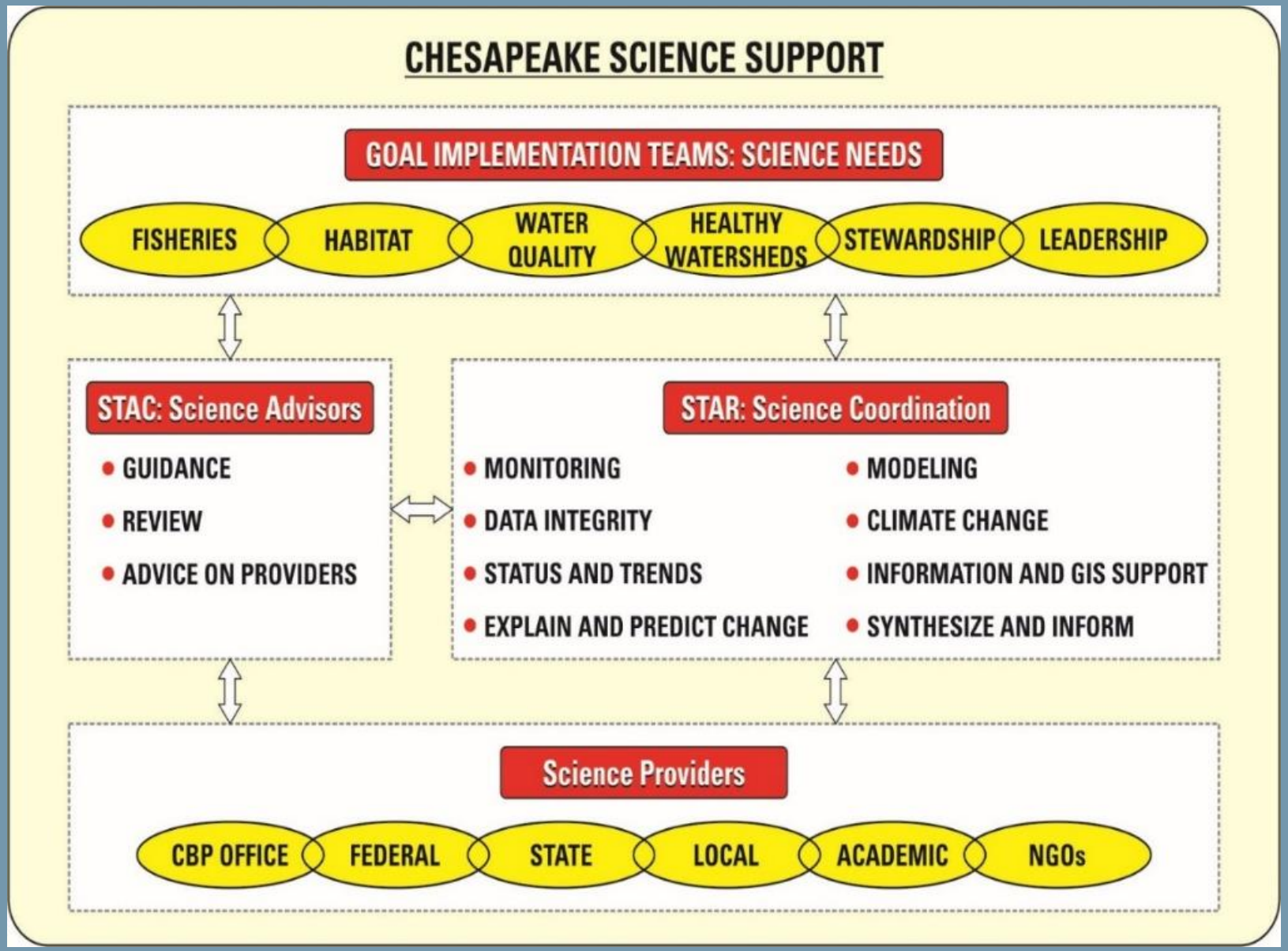
Evolving USGS Science:

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

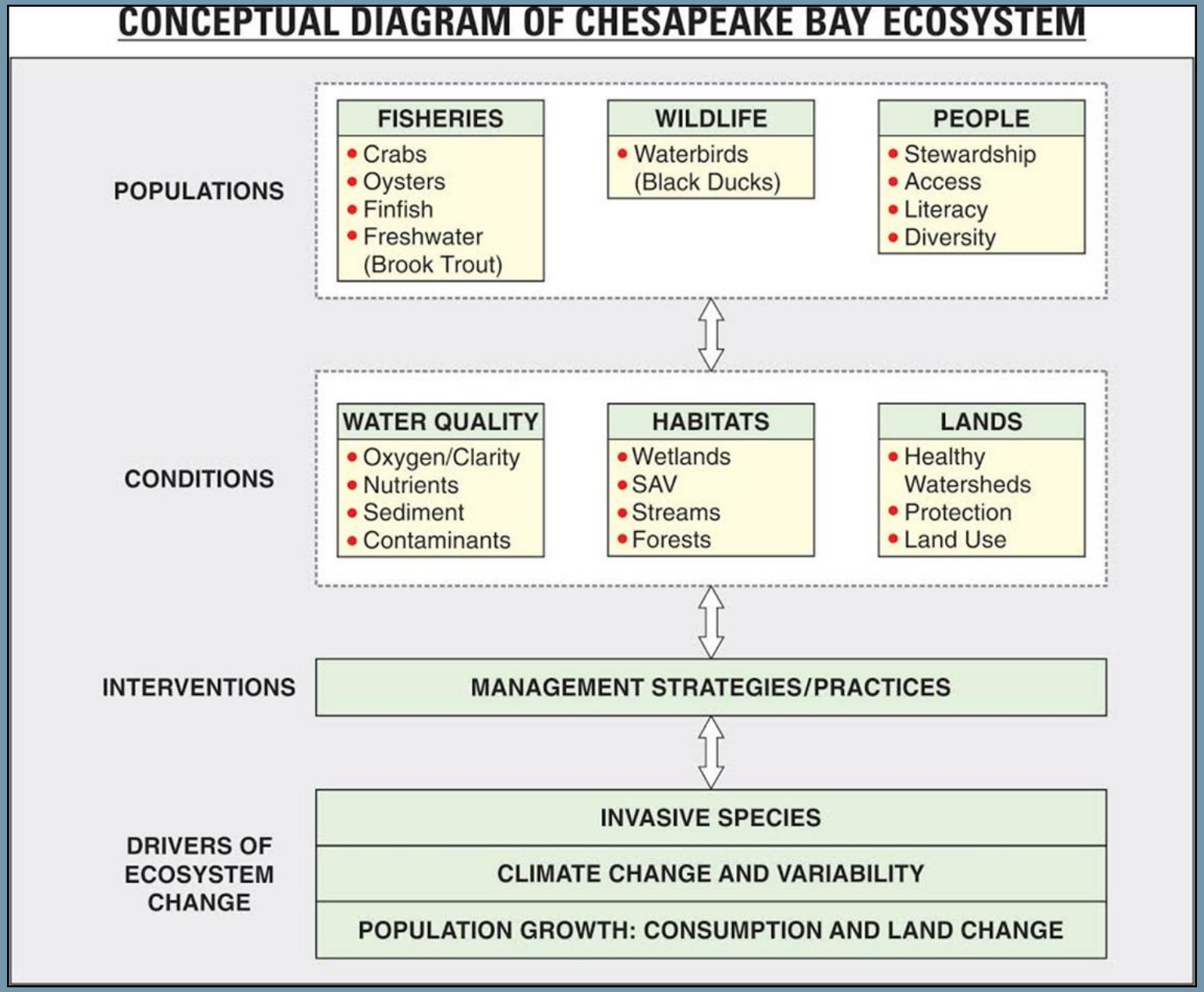
USGS
science for a changing world

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

USGS science for a changing world

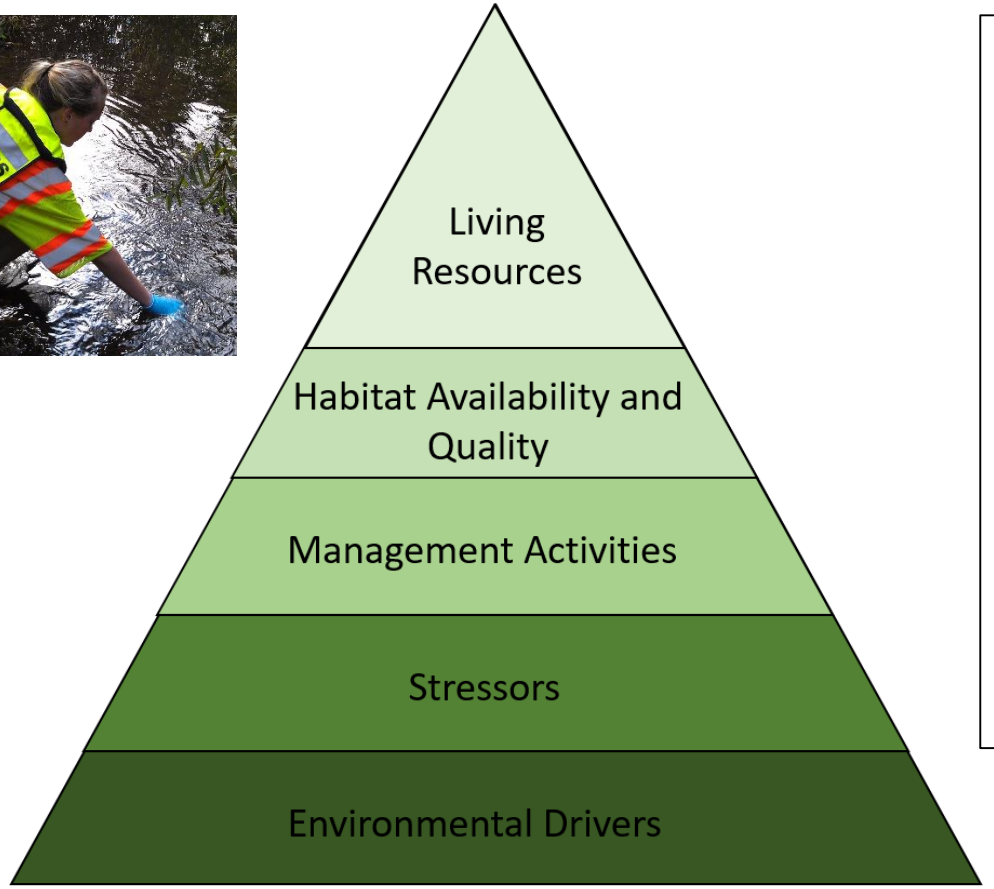
Theme 1: Fish Habitat, Health, and Aquatic Conditions

CBP:

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

DOI/USGS:

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



Landscape Settings

- Based on fish habitat types
- STAC workshop

Settings:

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

USGS science for a changing world

USGS: Risks to Coastal Habitats and Migratory Waterbirds

Risks to Coastal Habitats & DOI Lands

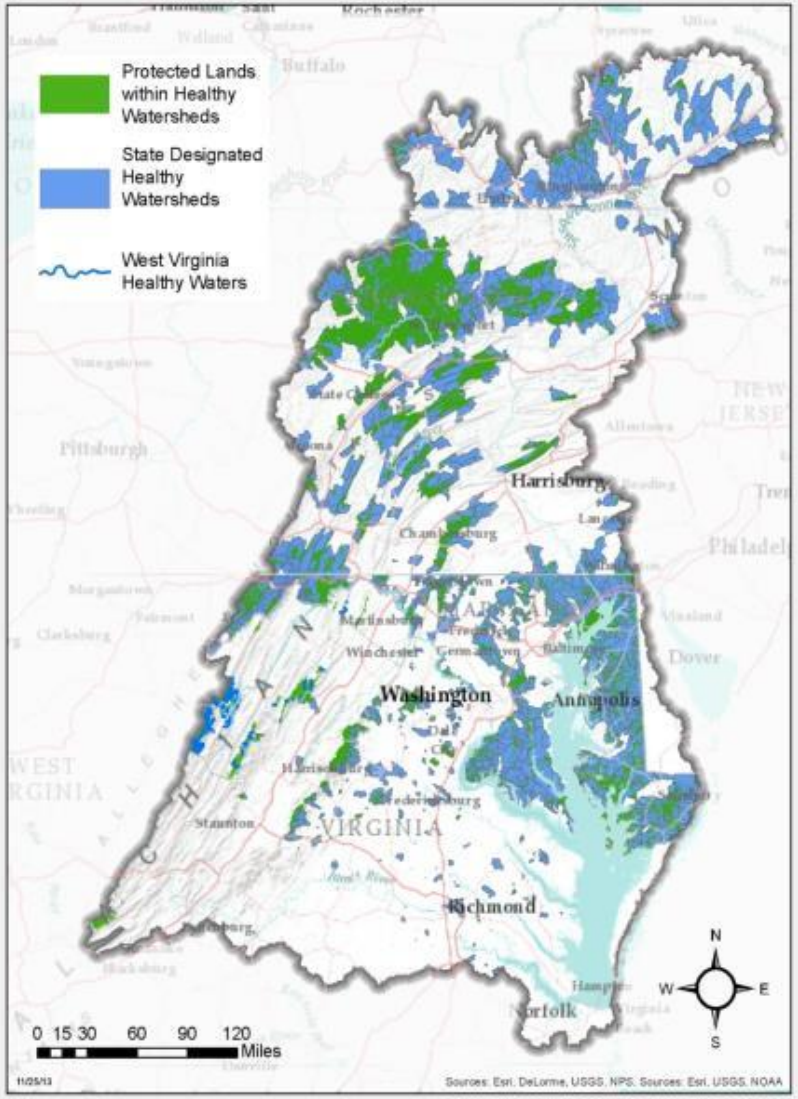
- Factors affecting nearshore habitats
- Forecast marsh migration, coastal vulnerability & response
- Relation to waterbird habitats

Migratory Waterbirds and Habitats

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

USGS
science for a changing world

Theme 3: Land Characterization and Change to Assess Vulnerability



CBP:

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

DOI/USGS:

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

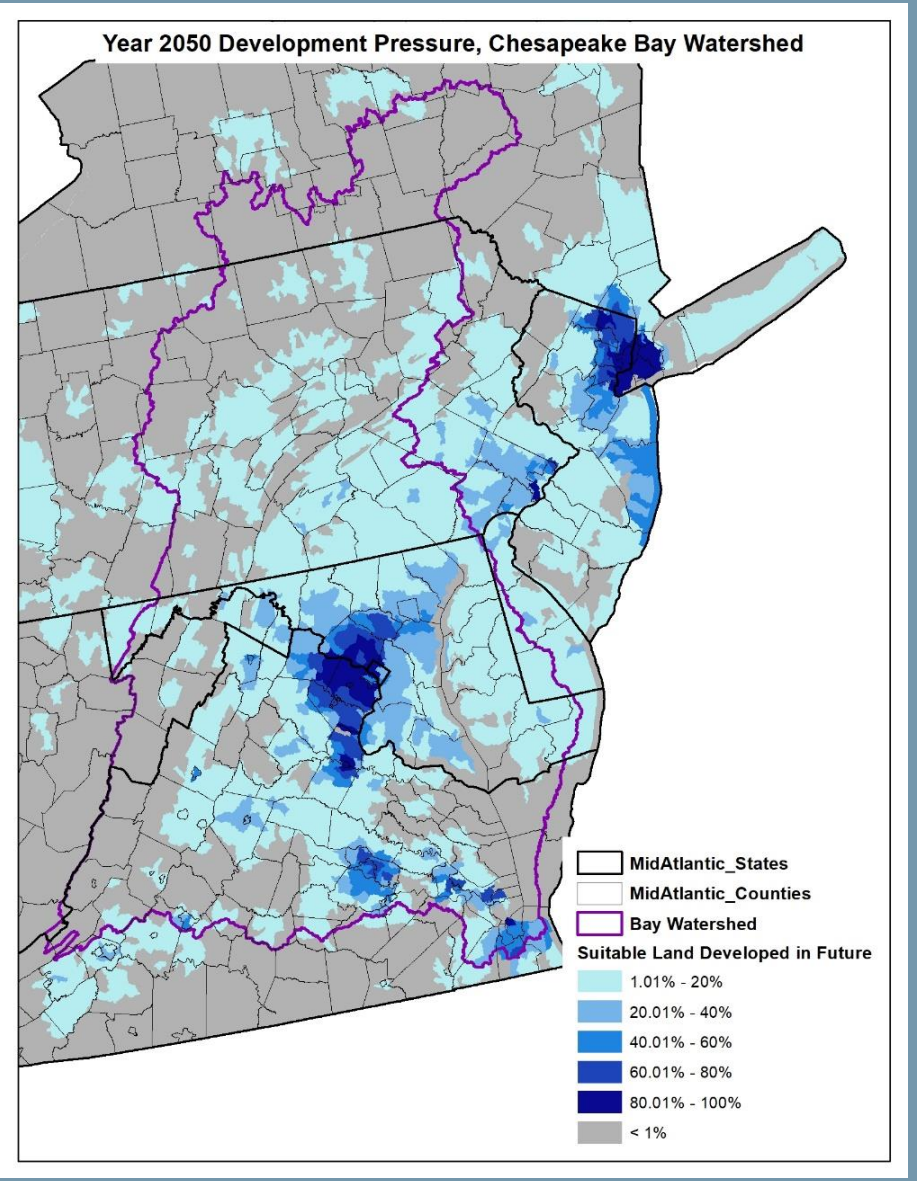
Theme 3: Land Characterization and Change to Assess Vulnerability

<u>Improve land characteristics information</u>

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

<u>Explain characteristics affecting vulnerability and resilience</u>

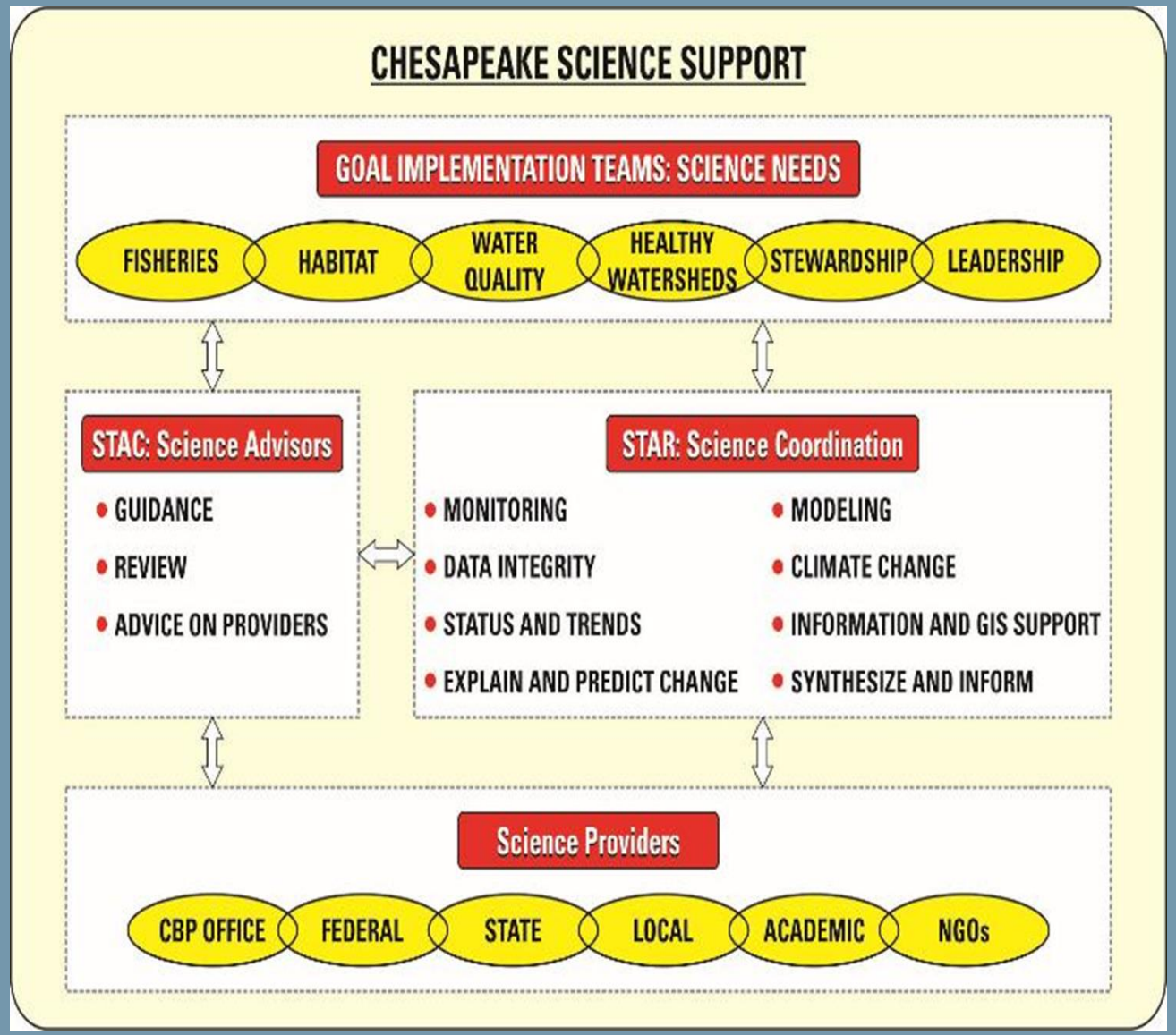
- Assess risk factors
- Changing watershed characteristics and stream health
- Inform planning and land protection actions



Chesapeake Bay Land Change Model v3a

USGS science for a changing world

Theme 4: Integrate Science and Engage Stakeholders



Importance & Issues

- Inform decisions for goals
- Meet deadlines
- Effective use of resources

Science Integration

- Collaboration
- Data sharing

Translate science and engage stakeholders

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

USGS
science for a changing world

Next Steps and Contacts

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

- Contacts:
- Scott Phillips (swphilli@usgs.gov)
- Ken Hyer (kenhyer@usgs.gov)
- Peter Claggett (pclagget@chesapeakebay.net)
- Renee Thompson (rthompso@chesapeakebay.net)

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