

# Conceptual Model Framework

Initial concepts by SCCWRP & SFEI



# Conceptual Model

The following **framework** suggests ways to represent the relationship among **management questions** associated with a receiving waters trash monitoring programs and the various **monitoring methods** that may inform those questions.

Also included would be the various ways to **categorize** the questions and the elements of the trash “lifecycle” they address.

# Categories of concern

## Inputs

Sources

Source locations/jurisdictions

## Treatment

Source control

Education

Product bans

Local removal

## State

Quantitative (load)

Qualitative (condition)

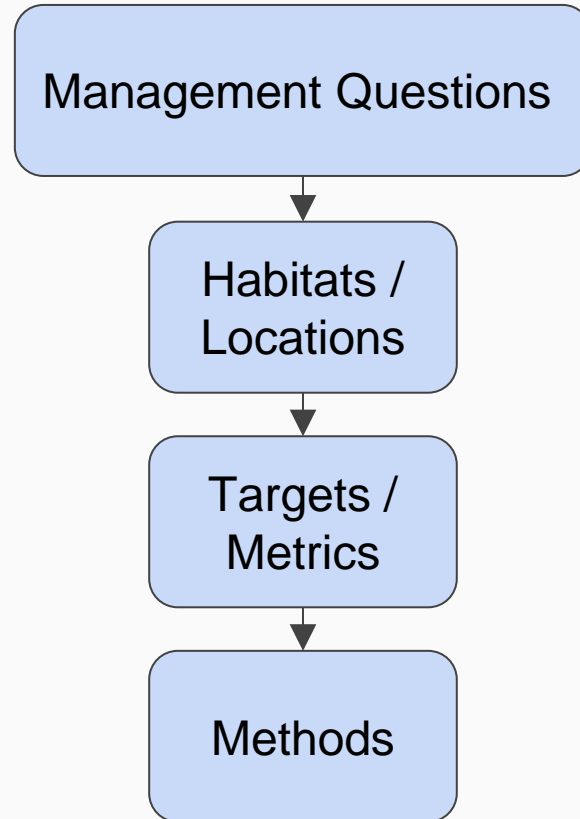
## Effects

Human health

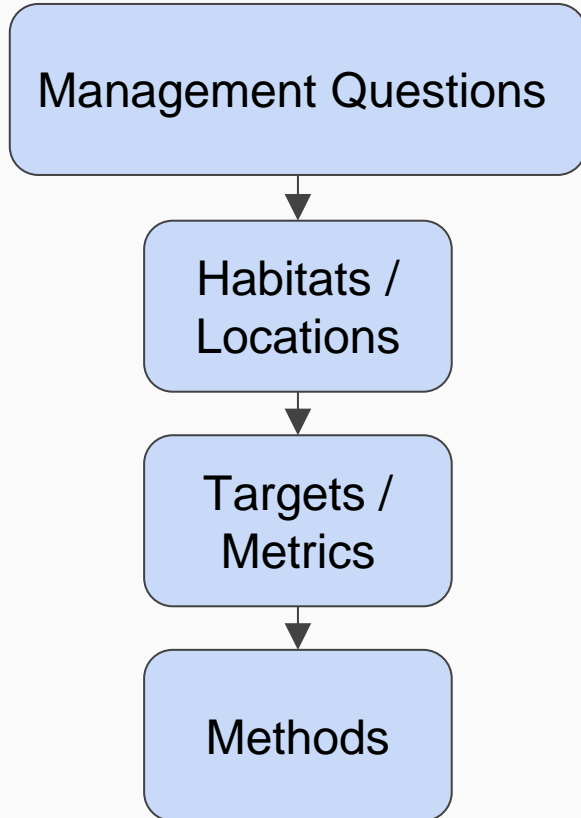
Wildlife health

Recreation/Economy

# Relationship



# Relationship



**Status:** How much debris is being transferred...

...from land to ocean/bay?

...in metric tons

**Input:** What are the sources of trash...

...from cities?

...as defined by neighborhood / sector / individual generator

**Treatment:** How effective are ctrl mechanisms...

...in storm drains?

...by device type

# Methods

Readily available (high level, general)

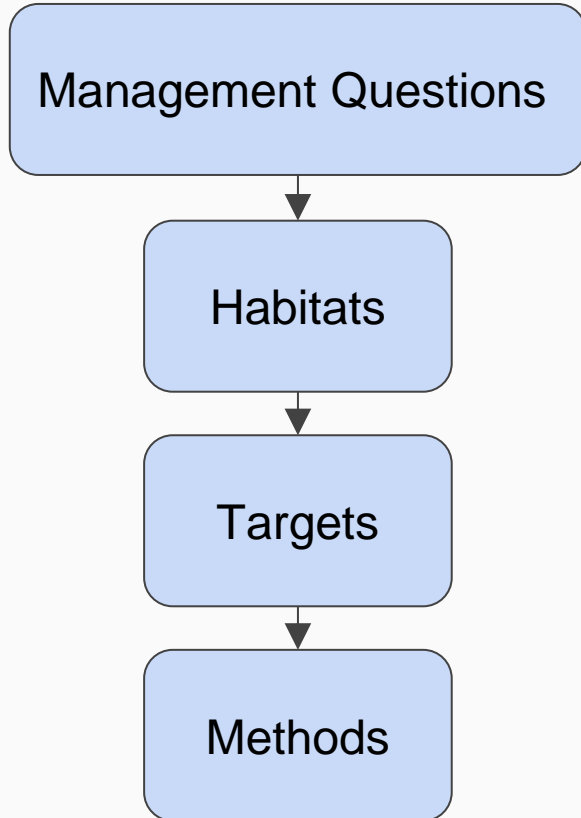
- Trawls
- Visual / Rapid assessments
  - Qualitative rubrics
  - Quantitative rubrics
- Abatement + Assessment
  - Physical Counts
  - Physical Weights
- Aerial assessments
  - Satellite-based
  - Plane-based
  - Unmanned Aerial Vehicles (UAS)
- Ground-level automation
  - Streetview assessments
  - Mounted sensors
- Threat assessments
  - To human health
  - To wildlife
  - To recreation / economy
- Chemical / Close visual inspection
- Citizen science assessments
  - Mobile devices
  - Opportunistic v optimized site selections

# Sampling Design

Considerations for refinement

- Location selections
  - Randomized surveys
  - Routine/Focused surveys
  - Landscape inventory
- Sampling frequency
  - Synchronized with street sweeping cycle
  - Synchronized with storm events
  - Synchronized with garbage collection days
  - Monthly
  - Quarterly
  - Random
- Sample size
- Resources
  - Volunteer support
  - Public budget
  - Equipment
  - Knowledge / Training

# Relationship



**Status:** How much debris is being transferred...

...from land to ocean/bay?

...in metric tons

- ...as detected by
- streetview assessments
  - aerial assessments
  - trawls

**Input:** What are the sources of trash...

...from cities?

...as defined by neighborhood / sector / individual generator

- ...as detected by
- close visual inspection
  - mapping efforts
  - streetview assessments

**Treatment:** How effective are ctrl mechanisms...

...in storm drains?

...by device type

- ...as detected by
- maintenance records
  - citizen assessments
  - mounted sensors