Population Dynamics Discussion
February 9, 2011
NMFS Sturgeon workshop; Alexandria, VA

Summary of General Discussion

1) Criteria Attributes
    a. Quantitative measures
    b. Best available science
    c. Precautionary (error)

2) Criteria
    a. Status (threshold, target)
        i. Effective population size
        ii. Absolute abundance
        iii. Age structure (diversity), sex ratio
        iv. Juvenile abundance/recruitment
        v. Spawner abundance
        vi. Population assignment/DPS assignment
    b. Trends
        i. Historical abundance
        ii. Relative abundance
    c. Distribution
        i. Range contraction/expansion
        ii. Number of viable populations
    d. Function (vital rates, migration, connectivity, ecological role)
        i. Growth rates (individual)
        ii. Spawning recruit ratios
        iii. Reproductive schedule
        iv. Correlation in population responses
        v. Mortality rate (ratio of natural to anthropogenic)
        vi. Spatially specific mortality rates
        vii. Density dependent growth

3) Model Frameworks
    a. Life history - Function
        i. PVA, Leslie matrix, EPR
        ii. End to end process model
        iii. Statistical catch at age
    b. Abundance – with add ons
        i. Mark-recapture
        ii. ASMR (Age structure mark recapture)
        iii. Gear selectivity models
    c. Relative abundance—NEAMAP, Groundfish BTS, Observer
        i. Detections of trends in survey abundance (power analysis)

    ii. Generalized linear models
    iii. Habitat models
    iv. Empirical relationships between relative and absolute abundances
d. Retrospective
    i. Stock reduction analysis
    ii. Leslie depletion model
    iii. Habitat models
e. Spatial
    i. Environmental functional relationships
    ii. Metapopulation models
    iii. GIS models of distribution
    iv. Biotelemetry Brownian model