



DAMAGE ASSESSMENT, REMEDIATION, and
RESTORATION PROGRAM (DARRP)



Valuation in Natural Resource Damage Assessment

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NOTE: THE OPINIONS EXPRESSED HEREIN ARE THE AUTHOR'S, ALONE, AND DO NOT NECESSARILY REPRESENT THE OFFICIAL POLICY OF THE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION.



Natural Resource Services

- *Services are fundamental to the determination of interim losses and for scaling restoration*
- *Services have value because humans care about them*
- *Services are functions that one resource performs for another or for humans*
- *A single resource may provide a variety of services*



Categories of Natural Resource Services

- *Ecological*
- *Cultural/Historical*
- *Sustenance*
- *Commercial*
- *Recreational*
- *Passive/Existence*



Scaling Approaches

- ***Service-to-service***
 - *Restoration action provides services of same type, quality and comparable value as were lost*
 - *A single metric is appropriate to capture quality differences between injured and replacement services*
- ***Value-to-value***
 - *Criteria are not met for service-to-service approach*
 - *Approach and method meet cost, timeframe and validity criteria*
- ***Value-to-cost***
 - *Service-to-service not appropriate; and*
 - *Valuation of lost services is possible, but valuation of replacement services cannot be done within reasonable timeframe and/or at reasonable cost*



Choice of Assessment Methods

- *Many factors influence the choice of methods*
- *Type and magnitude of injuries and likely damages*
- *Level of certainty required*
- *Cooperative vs. non-cooperative assessment*
- *Reasonableness of costs and timeframe*
- *Private vs. public losses*
- *Purpose of NRDA is to provide compensatory restoration*



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Service-to-Service Approach

Framework

- *Service losses due to injury = service gains from compensatory restoration*
- *Obtain equivalency between the services lost and those gained through restoration*

Conditions for use

- *Injured and restored resources and service are the same type, quality and of comparable value or can be scaled to be equal*

Typically Encompasses

- *Habitat / Resource Equivalency Analysis (HEA or REA)*
- *Methods estimating direct human use resource services (e.g. recreation) subject to constraints/limitations*



Value-to-Value Approach

Framework

- *Monetary value of losses due to injury = monetary value of gains from compensatory restoration project*

Conditions for use

- *Applied when service-to-service is not appropriate (with exceptions)*

Directly analogous to HEA scaling process

- *but uses monetary value, rather than measured service flows or proxy metrics as the basis of equivalency calculation*



Value-to-Cost Approach

- *Monetary value of service losses due to injury = monetary cost of restoration projects*
- *Used for limited types of injuries, e.g. recreation losses*
 - *Primarily when neither service-to-service nor value-to-value methods can be performed at a reasonable cost and/or within a reasonable time frame*
- *Traditional approach pre-OPA and cooperative assessment process*



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