



EcoMetrix Solutions Group's EScan

An Ecosystem Services Screening Tool



Context Appropriate Tool Selection

Desired Certainty	Level of Risk Acceptable	Analysis Effort – Ecosystem Services Production	Analysis Effort – Stakeholder Engagement
Very high	Low	Functional Assessment (EcoMetrix)	Stakeholder Collaboration (EPLUS)
High	Moderate	Functional Assessment (EcoMetrix)	Stakeholder Interviews
Moderate	Moderate	Rapid Assessment (EcoMetrix)	Inferred from Existing Studies
Low-Moderate	Moderate	Desktop (EcoMetrix)	Inferred from Existing Studies
Low-Moderate	High	Screening Evaluation (EScan)	Publicly Available Data



The colored dots represent analysis formats that can be stand-alone or that can be used as building blocks when engaged in a design or approval process that requires increasing levels of analysis rigor during the life of a project.



EScan Highlights

- Ecosystem services screening tool
- Context: designed around a “no-net-loss of ecosystem services” threshold – tied to project activities
- Site information completed by Applicant
- Reviewer evaluates project risk
- All inputs selected from drop-down boxes
- Data bases and scoring tables are “behind the scenes” for ease of use, but available for transparency



What Does the Final EScan Report Look Like?

Applicant					
Service	Impact of Project Design (w/Avoidance and Minimization)?	Effect of Available On-site Mitigation Options ?	Consequences of Service Flow Interruption on Local Ecosystem/ Society ?	Consequences of Service Flow Interruption on Regional/ Global Ecosystem/ Society ?	Potential for Significant Cumulative Impacts?
Food (Fisheries)	Neutral	Net gain	High	None	Moderate
Food (Agriculture)	Negative	Net loss	High	None	Very high/Unknown
Fresh Water	Neutral	Neutral	High	Low	High
Climate Regulation	Negative	Net loss	Very low	Low	Very high/Unknown
Water Regulation	Neutral	Neutral	High	Moderate	High
Biodiversity	Negative	Net loss	Moderate	Low	High

Reviewer					
Ability to Achieve No-Net-Loss by Incorporating Additional Offset Strategies?	Confidence in No-Net-Loss Determination?	Data Gaps/ Additional Analysis Needs ?	Additional Potential Impact Reduction and Offset Strategies ?	SERVICE SCREENING SCORE	Screening Decision
Very high	Very high	Technical studies	Off-site, in kind	51	Monitor
Moderate	High	Stakeholder input	Off-site, in kind	26	Investigate
High	High	Technical studies	Off-site, in kind	36	Investigate
None/Unknown	Moderate	Technical studies	Negotiated variance	20	Prioritize
Moderate	High	Mapping	Off-site, out of kind	32	Investigate
High	High	Other	Off-site, in kind	28	Investigate



How Does the Final Report Get Populated?

Applicant					
Service	Impact of Project Design (w/Avoidance and Minimization) ?	Effect of Available On-site Mitigation Options ?	Consequences of Service Flow Interruption on Local Ecosystem/ Society?	Consequences of Service Flow Interruption on Regional/ Global Ecosystem/ Society?	Potential for Significant Cumulative Impacts ?
Food (Fisheries)	Neutral	Net gain	High	None	Moderate
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Water Regulation	Neutral	Neutral	High	Moderate	High
Biodiversity	Negative	Net loss	Moderate	Low	High

First Question

The following slides depict how the Applicant answers the first question and how “behind the scenes” databases are used to provide the outputs shown on this table. A similar process exists for each question included in the Applicant and Reviewer portions of the Report.



What Information Does the Applicant Need?

- Site map and/or air photo
- List of project development activities (e.g. clearing, grading, etc.)
- Site design/concept plan that identifies footprint activity areas, overlain on site map



What Does the Applicant Do?

- Answer spreadsheet questions using guidance document

Example: Question #1: Impact of Project Design

- Identify whether each development activity will reduce, increase, or have no effect on the net amount (area) of key site attributes present – can be done with or without GIS, as long as it is possible to measure area
- Select appropriate response from drop-down list – the system does the rest (see next 2 slides)

Activity	Ground Cover (Herbaceous)	Shrub Cover	Tree Cover
Clearing/grading	Reduce ▼	Reduce ▼	Reduce ▼
Fill placement	Reduce ▼	No Change ▼	No Change ▼
Planting	Increase ▼	No Change ▼	Increase ▼
Net Change (Area-Based)	Loss	Loss	Gain



What Happens Behind the Scenes?

Activity	Ground Cover (Herbaceous)	Shrub Cover	Tree Cover
Clearing/grading	Reduce ▼	Reduce ▼	Reduce ▼
Fill placement	Reduce ▼	No Change ▼	No Change ▼
Planting	Increase ▼	No Change ▼	Increase ▼
Net Change (Area-Based)	Loss	Loss	Gain

Attribute	Affected Abiotic Functions	Affected Biotic Functions
Ground cover (herbaceous)	Erosion control, filtration, infiltration, etc...	Small and large mammal support, etc...
Shrub cover	Atmospheric cleansing, evaporation, soil stability, etc...	Raptor support, songbird support, etc...
Tree cover	Carbon sequestration, erosion control, landscape connectivity, etc...	Bat support, large mammal support, etc...

Function	Affected Provisioning Svcs.	Affected Regulating Svcs.	Affected Cultural Svcs.	Affected Supporting Svcs.
Atmospheric cleansing	Air quality...	Climate Regulation...	Aesthetic values...	
Infiltration	Fresh water...	Natural hazard mitigation...		Soil formation...
Groundwater recharge	Fresh water...	Water regulation...	Recreation...	Biodiversity support...
Erosion control	Fisheries...	Natural hazard mitigation...	Cultural heritage...	Biodiversity support...

Behind the scenes



What Happens Behind the Scenes (cont.)?

Function	Affected Provisioning Svcs.	Affected Regulating Svcs.	Affected Cultural Svcs.	Affected Supporting Svcs.
Atmospheric cleansing	Air quality...	Climate Regulation...	Aesthetic values...	
Infiltration	Fresh water...	Natural hazard mitigation...		Soil formation...
Groundwater recharge	Fresh water...	Water regulation...	Recreation...	Biodiversity support...
Erosion control	Fisheries...	Natural hazard mitigation...	Cultural heritage...	Biodiversity support...

Service	Ground Cover (Herbaceous)		Shrub Cover		Tree Cover		Net	
Fresh Water	Positive	5	Positive	5	Positive	5	Positive	5
	Neutral	0	Neutral	0	Neutral	0	Neutral	0
	Negative	-5	Negative	-5	Negative	-5	Negative	-5

Applicant					
Service	Impact of Project Design (w/Avoidance and Minimization)	Effect of Available On-site Mitigation Options	Consequences of Service Flow Interruption on Local Ecosystem/ Society	Consequences of Service Flow Interruption on Regional/ Global Ecosystem/ Society	Potential for Significant Cumulative Impacts
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What Does the Reviewer Do?

- Review Applicant's responses
- Complete Reviewer's portion of workbook:
 - Evaluate ability to achieve no-net loss and document confidence level
 - Identify data gaps/additional analysis needed (select from drop-down lists)
 - If net loss is anticipated, use database to identify additional potential impact reduction and offset strategies
- Incorporate screening decision outputs into project plan

Ability to Achieve No-Net-Loss by Incorporating Additional Offset Strategies		Reviewer				Finding		
Very high	10	Service	Ability to Achieve No-Net-Loss by Incorporating Additional Offset Strategies	Confidence in No-Net-Loss Determination	Data Gaps/ Additional Analysis Needs	Additional Potential Impact Reduction and Offset Strategies	SERVICE SCREENING SCORE	Screening Decision
High	8							
Moderate	6							
Low	4							
Very low	2							
None/Unknown	0							
Food (Fisheries)	Very high	Very high	Technical studies	Off-site, in kind	51	Monitor		
Food (Agriculture)	Moderate	High	Stakeholder input	Off-site, in kind	26	Investigate		
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EScan Strengths and Limitations

- Links activity types to ecosystem function and service impacts
 - Qualitative, based on no-net-loss threshold
- Requires minimal data
- Can identify need for – and help focus – more detailed analysis
- All fields and scoring regimens can be tailored to user need
- Designed to enable evaluation with varying degrees of data – key step is capturing data uncertainties in Reviewer section of report to inform risk management

