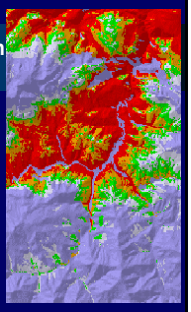
Monitoring and quality control in restoration ecology projects



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Presentation outline

- Restoration ecology and Quality control concepts.
- Quality control methodology: restoration ecology as a process.
- Restoration ecology sucesses: from ideas to reality.
- Conclusions.

Quality control concepts and its aplication to restoration ecology

1

CONCEPTS

WHY QUALITY CONTROL IN RESTORATION ECOLOGY?

Restoration ecology

Ecological restoration is the process of assisting the recovery of an ecosystem that has been degraded, damaged, or destroyed (other Re-concepts)

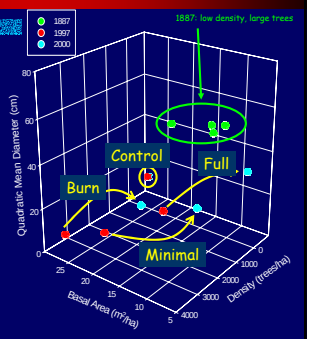
Key words:

- process ⇨ activities
- recovery ⇨ time
- ecosystem ⇨ complexity

www.ser.org.

Restoration ecology projects are dynamic; the uncertainty needs to be managed.

The product is not a plan (or project), it's a **process**.



Fulé *et al.*, 2002

Are Restorations Successful?

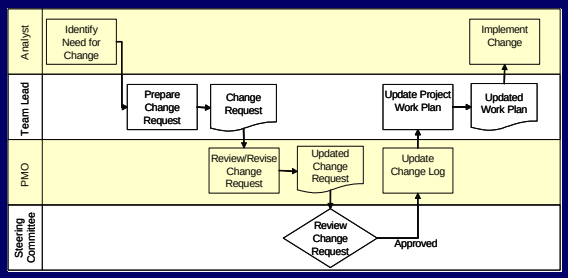
- Numerous successes have been described in the literature, but it is recognized that ecosystems are extremely complex and their response to physical and biological manipulations are not easy to predict. (i.e., there have been a lot of failures!)
- Current restoration projects are not being done in a very organized, coherent method with little development of general theories.

SER, 2005; Hobbs and Norton, 1996

Quality control

A systematic and independent examination to determine if activities and related results have caused changes and are suitable to achieve objectives (reliable feedback for adaptive management)

Key words: examination, activities, arrangements, commitments, suitability, objectives



Basic Steps in Restoration

- Getting organized
- Identifying the problems and opportunities
- Developing goals and objectives
- Selecting and designing restoration alternatives
- implementing, monitoring, evaluating, and adapting the project.

The Stream Corridor Restoration Plan Development Process

Restoration and quality

Project managers must be informed by a program of systematic observation and monitoring

⇩

Design a process for converting ideas into management response, and test the process with real data

Get Real ¡¡

Some considerations

Forests ecosystems restoration

Initial quality control assesment

Quality control methodology

2

METHODOLOGY

How do we proceed?

Measure progress toward the goals

Control objetive	Control process
Planning and project	Technical review of project
Project implementation	Field reports and integration on GIS
Initial assessment	Survey
Adjust Programming	Group discussion

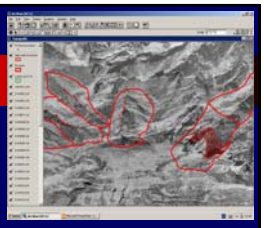
Technical review of projects

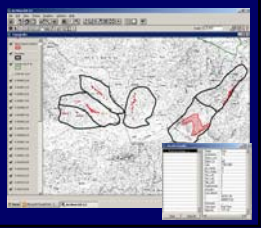
Planning and project → Technical review of project

Begin technical review of projects at their conceptual design stage focus on project performance.

Conceptual planning GIS

- Identify the kind of ecosystem to be restored
- Type of restoration project
- Identify physical site conditions in need of repair
- Identify biotic (structural) interventions that are needed
- Identify landscape restrictions, present and future





Technical review of projects

Planning and project → Technical review of project

Begin technical review of projects at their conceptual design stage focus on project performance.

Conceptual planning

Activities

GIS

Programming

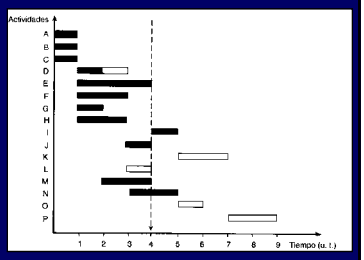
Technical review of projects

1) Site Preparation –

2) Species and Seedlings Selection -

3) Planting Methods -

4) Post plantation management -



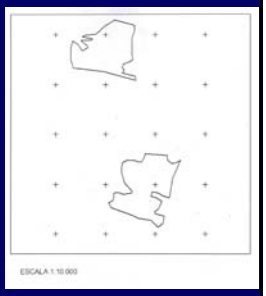
Technical review of projects

Ecosystems functionality	Descriptive
New technical approach	Lack of technical description
Complexity	Unrealistic

Project implementation

Project implementation → Field reports and integration on GIS

Systematic stratified sampling of 5-10% of total surface in **Guadiamar project.**

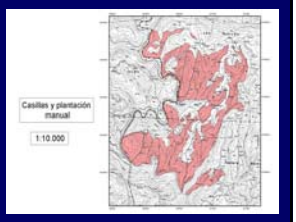


Guadiamar project

Kind of ecosystem	Project density	Estimated density		Real density		Plants alive	
Mediterranean ecosystem	725	673	92%	505	75%	465	64%
Strem ecosystem	830	771	92%	703	91%	611	73%
Transition ecosystem	980	910	92%	792	87%	681	69%

Project implementation

Make maps of implemented activities to compare with the guidelines and existing management options.



Project implementation

GIS support

Basic knowledge

Quality standard

Change of decisions

Lack of field guidelines

Not included in project implementation

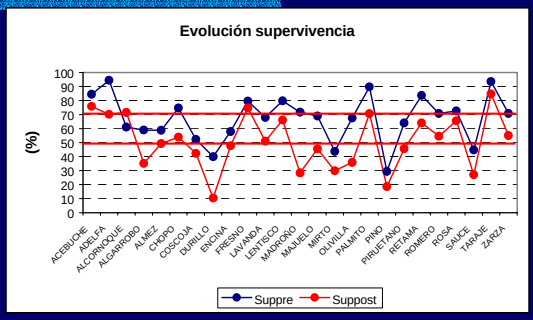
Initial assessment

Initial assessment → Survey

Semi-permanent samples.-

In Madroñalejo and Guadiamar project, 6 control plots were established

Guadiamar project



Initial assessment

GIS and GPS control

Field survey

Flexibility

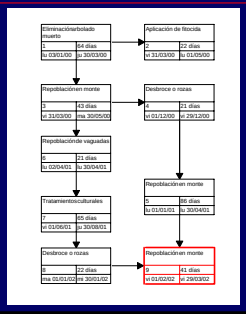
Time schedule

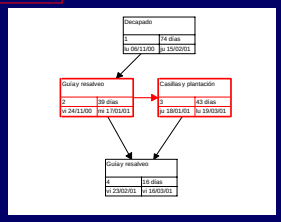
Variable control

Uncertainly

Adjust programming

Adjust programming → Group discussion





Adjusts projects as tools to achieve the goals

Adjust programming

Better programming

Improvisation

Adaptability

Burocrathy

Complexity

Unrealistic

Restoration ecology sucesses: from ideas to reality

3

CONSECUENCIES

WHERE ARE WE & WHAT HAVE WE LEARNED?

where are we & what have we learned?

"monitoring is scary"
- sounds like evaluation (judgement)

"monitoring is hard and a waste of time"
- sounds like research (complex, time consuming, irrelevant)

shifting to:
"we can use this"

The cost of monitoring

Software and GPs equipment, cartography.

Total cost: 3.300 €/month.

Technician and field team.

10 restoration projects

Conclusions

4

THE FUTURE

NEW PROGRESS IN RESTORASTION?

Conclusions

- There is a lack of monitoring in restoration projects
- Develop shared understanding of restoration ecology projects from project monitoring and reporting
- Work towards a common conceptual model of monitoring development as basis tool for common approach to restoration
- Identify next steps for technical development in restoration ecology plans
- Support networking among projects to facilitate sharing of monitoring approaches, measures, tools.