EVALUATING MANAGEMENT EFFECTIVENESS IN MARINE PROTECTED AREAS:

An Overview for California's MLPA Process

MLPA Initiative
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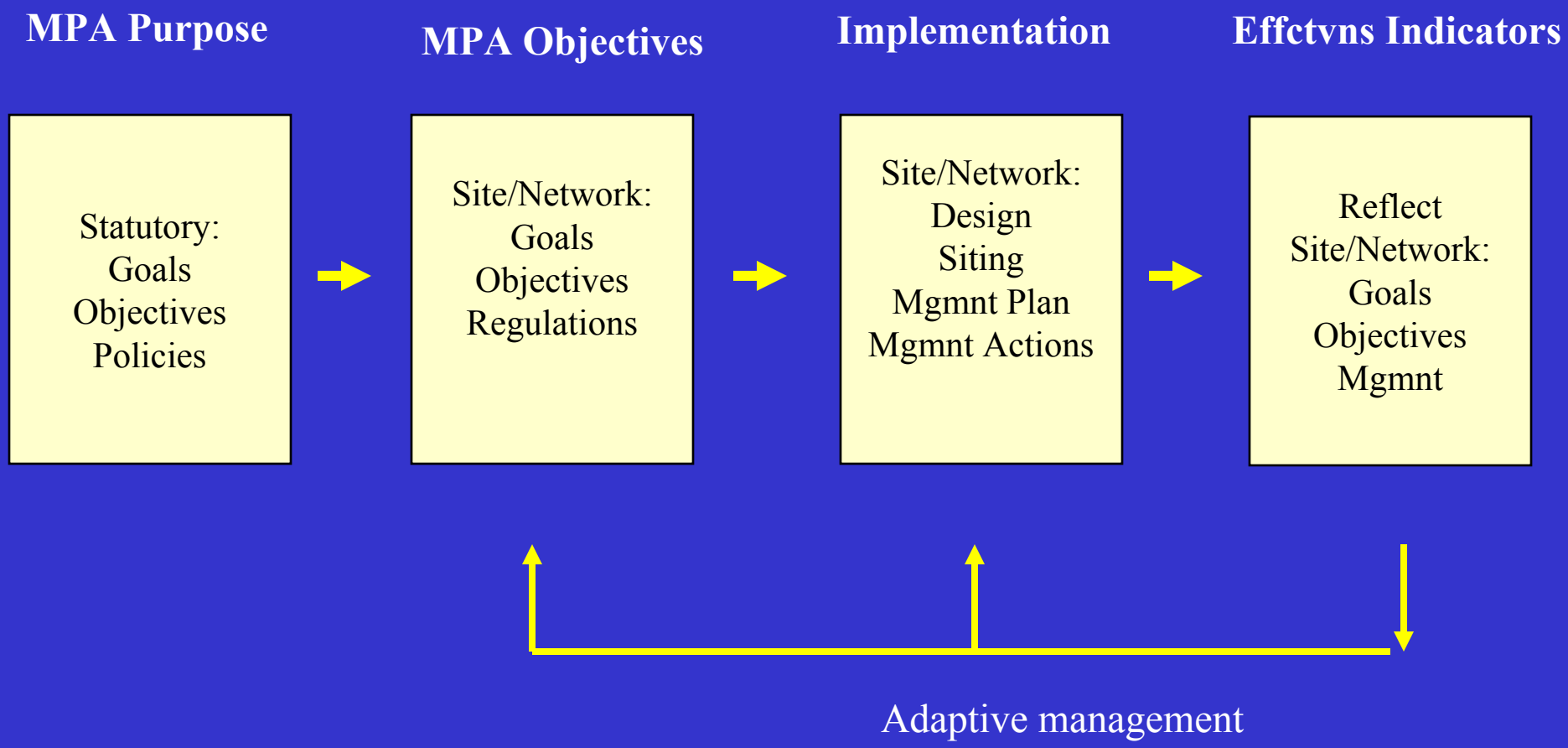
What Is Management Effectiveness in MPAs?

- MPAs are generally established to achieve broad conservation and/or management *goals*
- Many have a more specific suite of associated *objectives*, intended uses and anticipated effects (i.e. outputs and outcomes).
- 'Management Effectiveness' is the measure of how well an MPA has met its *stated goals and objectives*.

Linking MPA Goals and Indicators



Who Cares About Effectiveness?

- **Policy / Legal Considerations**
  - Often legally required by statute or regulation
  - Meets growing demand for performance measures
  - Increasingly linked to periodic management reviews

- **Operational / Management Considerations**
  - Track status and trends of key resources and uses
  - Improves project planning
  - Enhances priority setting
  - Promotes adaptive management
  - Informs broader ecosystem-based management

- **Stakeholder Issues**
  - Responds to stakeholder concerns for accountability
  - Documents successes and failures of specific MPA approaches
  - May illustrate the 'value added' of MPAs

How Do You Measure Effectiveness?

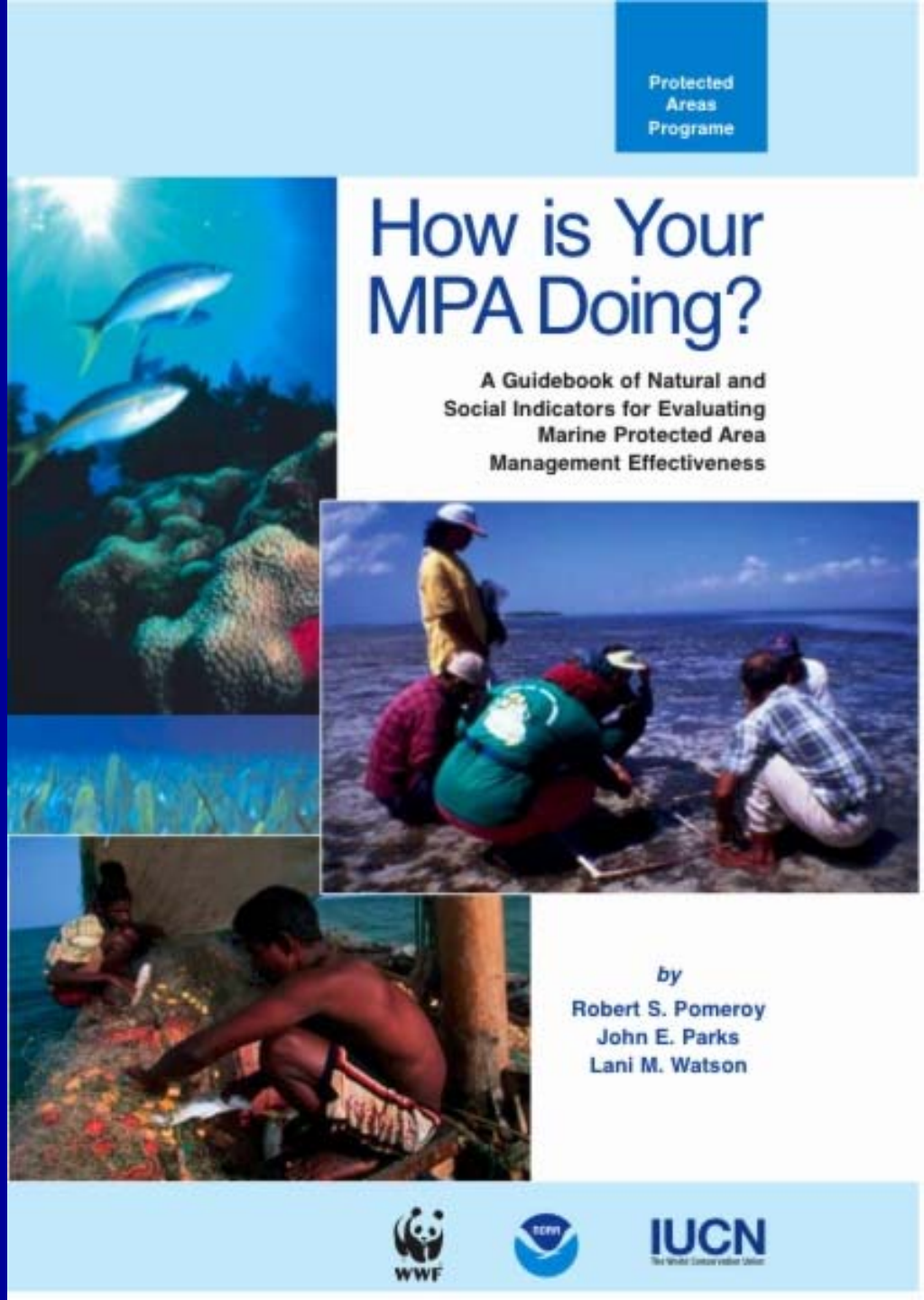
- Management Effectiveness can be measured in three distinct currencies:
  - Biophysical indicators
  - Social indicators
  - Governance indicators

- The selected indicators should reflect the MPA's stated goals and objectives (i.e. what the MPA is intended to achieve).

Measuring Effectiveness in Real Life:
The IUCN/WCPA Handbook as a Framework for Evaluating MPA Effectiveness

- Joint international collaboration IUCN, NOAA, WWF
- Provides flexible framework and tools to evaluate MPAs
- Designed to be applicable in variety of situations
- Piloted around the world in different ecosystems

the guidebook



WCPA-Marine / WWF
MPA Management Effectiveness Initiative

Goal

- Improve management of MPAs by providing managers, planners and other decision-makers with methods for assessing effectiveness of MPAs

Objectives

- Develop MPA-specific indicators and a guidebook for MPA managers
- Field-test and refine indicators and guidebook
- Increase awareness and use of monitoring and evaluation in MPAs

Developing the Guidebook: Audiences

Primary audiences:

- managers
- marine conservation practitioners

Also hoped useful for people who:

- are working in or fishing near by a MPA
- are living close by a MPA
- work in organizations that implement MPAs
- serve as decision-makers on MPAs
- serve as donors to MPAs
- are researchers, students, or educators
- are simply interested in MPAs

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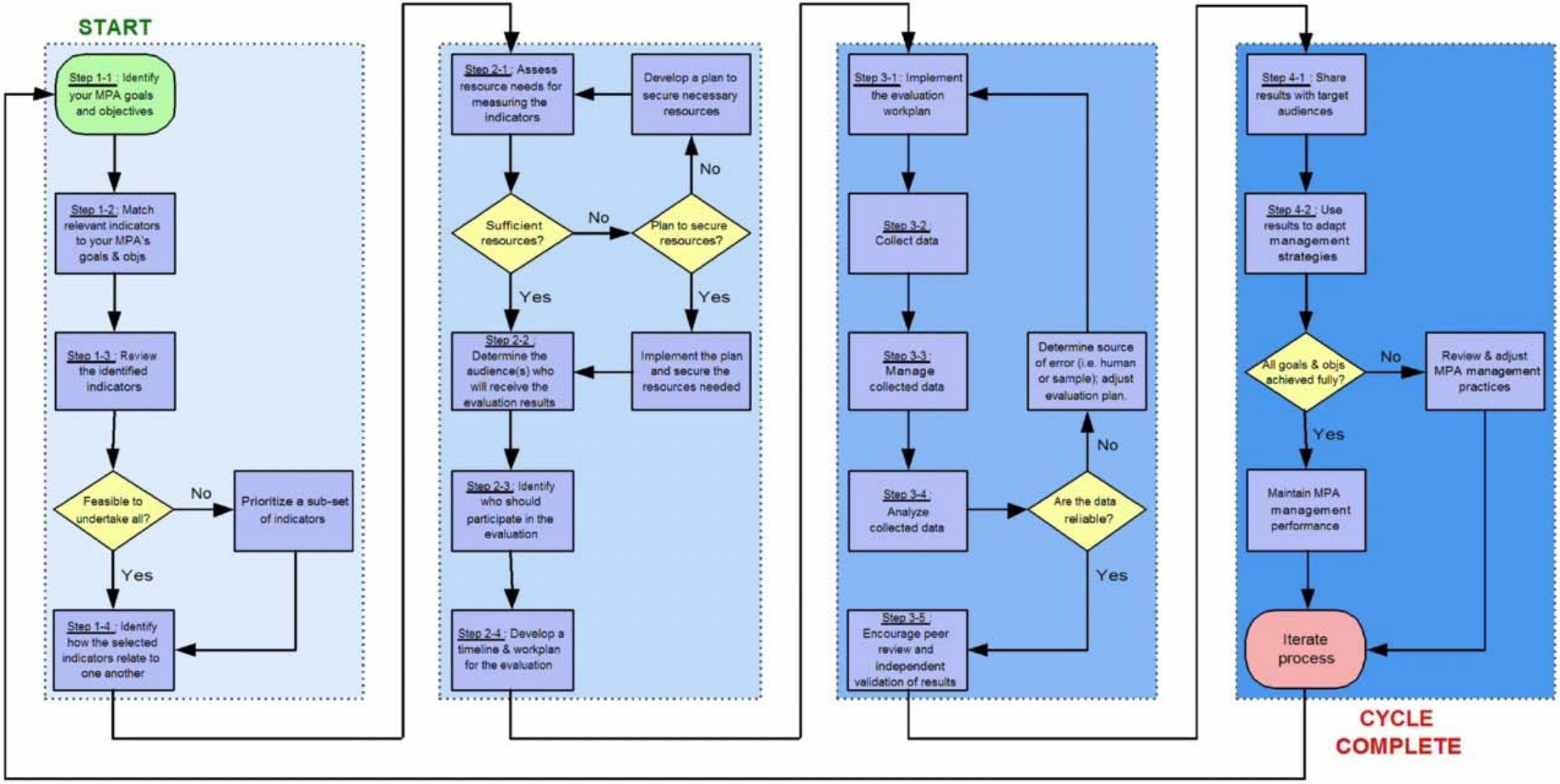
4 Steps to Management Effectiveness

Selecting Indicators | Planning the Evaluation | Conducting the Evaluation | Using the Results



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Three Categories of Indicators:

Biophysical indicators (n=10)

Socioeconomic indicators (n=16)

Governance indicators (n=16)

Introducing the guidebook's

Biophysical Indicators *(n=10)*

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There are 5 biophysical goals…

1 - Marine resources sustained or protected
2 - Biological diversity protected
3 - Individual species protected
4 - Habitat protected
5 - Degraded areas restored

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There are 10 Biophysical Indicators:

B1 - Focal species abundance
B2 - Focal species population structure
B3 - Habitat distribution and complexity
B4 - Composition and structure of the community
B5 - Recruitment success within the community
B6 - Food web integrity
B7 - Type, level, and return on fishing effort
B8 - Water quality
B9 - Area showing signs of recovery
B10 - Area under reduced human use/impacts

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6 focus on the biotic context…

B1 - Focal species abundance
B2 - Focal species population structure
B3 - Habitat distribution and complexity
B4 - Composition and structure of the community
B5 - Recruitment success within the community
B6 - Food web integrity
B7 - Type, level, and return on fishing effort
B8 - Water quality
B9 - Area showing signs of recovery
B10 - Area under reduced human use/impacts

… including 2 at the species level…

B1 - Focal species abundance
B2 - Focal species population structure
B3 - Habitat distribution and complexity
B4 - Composition and structure of the community
B5 - Recruitment success within the community
B6 - Food web integrity
B7 - Type, level, and return on fishing effort
B8 - Water quality
B9 - Area showing signs of recovery
B10 - Area under reduced human use/impacts

… 1 on habitat …

B1 - Focal species abundance
B2 - Focal species population structure
B3 - Habitat distribution and complexity
B4 - Composition and structure of the community
B5 - Recruitment success within the community
B6 - Food web integrity
B7 - Type, level, and return on fishing effort
B8 - Water quality
B9 - Area showing signs of recovery
B10 - Area under reduced human use/impacts

… and 3 on community ecology.

B1 - Focal species abundance
B2 - Focal species population structure
B3 - Habitat distribution and complexity
B4 - Composition and structure of the community
B5 - Recruitment success within the community
B6 - Food web integrity
B7 - Type, level, and return on fishing effort
B8 - Water quality
B9 - Area showing signs of recovery
B10 - Area under reduced human use/impacts

1 focuses on the ‘goods’ generated.

B1 - Focal species abundance
B2 - Focal species population structure
B3 - Habitat distribution and complexity
B4 - Composition and structure of the community
B5 - Recruitment success within the community
B6 - Food web integrity
B7 - Type, level, and return on fishing effort
B8 - Water quality
B9 - Area showing signs of recovery
B10 - Area under reduced human use/impacts

There is only 1 abiotic indicator.

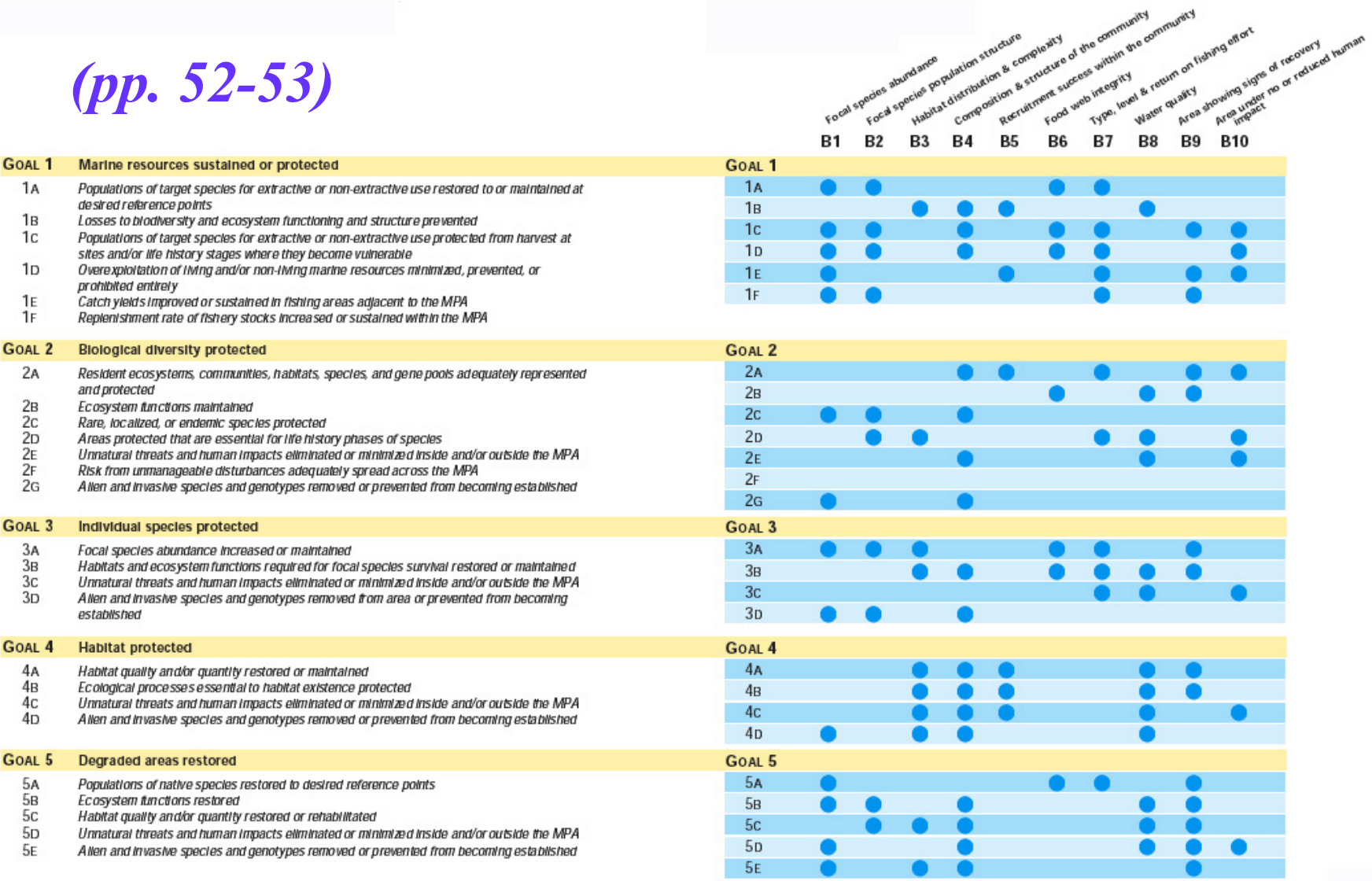
B1 - Focal species abundance
B2 - Focal species population structure
B3 - Habitat distribution and complexity
B4 - Composition and structure of the community
B5 - Recruitment success within the community
B6 - Food web integrity
B7 - Type, level, and return on fishing effort
B8 - Water quality
B9 - Area showing signs of recovery
B10 - Area under reduced human use/impacts

Finally, 2 observe ‘aerial’ changes.

B1 - Focal species abundance
B2 - Focal species population structure
B3 - Habitat distribution and complexity
B4 - Composition and structure of the community
B5 - Recruitment success within the community
B6 - Food web integrity
B7 - Type, level, and return on fishing effort
B8 - Water quality
B9 - Area showing signs of recovery
B10 - Area under no or reduced human impact

Linkages between Biophysical Goals, objectives and indicators:

(pp. 52-53)



Introducing the guidebook's Socioeconomic Indicators *(n=16)*

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There are 6 socioeconomic goals…

1 - Food security enhanced or maintained.

2 - Livelihoods enhanced or maintained.

3 - Non-monetary benefits to society enhanced or maintained.

4 - Benefits from the MPA equitably distributed.

5 - Compatibility between management and local culture maximized.

6 - Environmental awareness and knowledge enhanced.

There are 16 Socioeconomic Indicators:

S1 - Local marine resource use patterns
S2 - Local values & beliefs re: the marine resources
S3 - Level of understanding of human impacts
S4 - Perceptions of seafood availability
S5 - Perceptions of local resource harvest
S6 - Perceptions of non-market and non-use value
S7 - Material style of life
S8 - Quality of human health
S9 - Household income distribution by source
S10 - Household occupational structure

There are 16 Socioeconomic Indicators:

S11 - Community infrastructure and business
S12 - Number and nature of markets
S13 - Stakeholder knowledge of natural history
S14 - Distribution of formal knowledge to community
S15 - % of stakeholder group in leadership positions
S16 - Changes in conditions of ancestral and historical sites, features, and/or monuments

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Linkages between Social Goals, objectives and indicators:

(pp. 116-117)

Goal 1	**Food security enhanced or maintained**	**Goal 1**
1A	*Nutritional needs of coastal residents met or improved.*	1A
1B	*Improved availability of locally caught seafood for public consumption.*	1B
Goal 2	**Livelihoods enhanced or maintained**	**Goal 2**
2A	*Economic status and relative wealth of coastal residents and/or resource users improved.*	2A
2B	*Household occupational and income structure stabilized or diversified through reduced marine resource dependency.*	2B
2C	*Local access to markets and capital improved.*	2C
2D	*Health of coastal residents and/or resource users improved.*	2D
Goal 3	**Non-monetary benefits to society enhanced or maintained**	**Goal 3**
3A	*Aesthetic value enhanced or maintained.*	3A
3B	*Existence value enhanced or maintained.*	3B
3C	*Wilderness value enhanced or maintained.*	3C
3D	*Recreation opportunities enhanced or maintained.*	3D
3E	*Cultural value enhanced or maintained.*	3E
3F	*Ecological services values enhanced or maintained.*	3F
Goal 4	**Benefits from the MPA equitably distributed**	**Goal 4**
4A	*Monetary benefits distributed equitably to and through coastal communities.*	4A
4B	*Non-monetary benefits distributed equitably to and through coastal communities.*	4B
4C	*Equity within social structures and between social groups improved and fair.*	4C
Goal 5	**Compatibility between management and local culture maximized**	**Goal 5**
5A	*Adverse effects on traditional practices and relationships or social systems avoided or minimized.*	5A
5B	*Cultural features or historical sites and monuments linked to coastal resources protected.*	5B
Goal 6	**Environmental awareness and knowledge enhanced**	**Goal 6**
6A	*Respect for and/or understanding of local knowledge enhanced.*	6A
6B	*Public's understanding of environmental and social 'sustainability' improved.*	6B
6C	*Level of scientific knowledge held by the public increased.*	6C
6D	*Scientific understanding expanded through research and monitoring.*	6D

Introducing the guidebook's

Governance Indicators *(n=16)*

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There are 5 governance goals…

1 - Effective management structures and strategies maintained

2 - Effective legal structures and strategies for management maintained

3 - Effective stakeholder participation and representation ensured

4 - Management plan compliance by resource users enhanced

5 - Resource use conflicts managed and reduced

There are 16 Governance Indicators:

G1 - Level of resource conflict
G2 - Existence of a decision-making & mngmnt body
G3 - Existence and adoption of a management plan
G4 - Local understanding of MPA rules & regulations
G5 - Existence and adequacy of enabling legislation
G6 - Availability & allocation of MPA admin resources
G7 - Existence & application of sci. research & input
G8 - Existence & activity level of community org.(s)
G9 - Degree of interaction btwn managers & stkhldrs
G10 - Proportion of stkhldrs trained in sustainable use

There are 16 Governance Indicators:

G11 - Level of training provided to stkhldrs in particp.

G12 - Level of stkhldr particp. & satisfaction in management process & activities

G13 - Level of stkhldr involvement in surveillance, monitoring, & enforcement

G14 - Clearly defined enforcement procedures

G15 - Enforcement coverage

G16 - Degree of information dissemination to encourage stkhldr compliance

Linkages between Governance Goals, objectives and indicators:

(pp. 164-165)

Goal 1	**Effective management structures and Strategies Maintained**	**Goal 1**
1A	*Management planning implemented and process effective.*	1A
1B	*Rules for resource use and access clearly defined and socially acceptable.*	1B
1C	*Decision-making and management bodies present, effective, and accountable.*	1C
1D	*Human and financial resources sufficient and used efficiently and effectively.*	1D
1E	*Local and/or informal governance system recognised and strategically incorporated into management planning.*	1E
1F	*Periodic monitoring, evaluation, and effective adaptation of management plan ensured.*	1F
Goal 2	**Effective legal structures and strategies for management maintained**	**Goal 2**
2A	*Existence of adequate legislation ensured.*	2A
2B	*Compatibility between legal (formal) and local (informal) arrangements maximized or ensured.*	2B
2C	*National and/or local legislation effectively incorporates rights and obligations set out in international legal instruments.*	2C
2D	*Compatibility between international, national, state, and local rights and obligations maximized or ensured.*	2D
2E	*Enforceability of arrangements ensured.*	2E
Goal 3	**Effective stakeholder participation and representation ensured**	**Goal 3**
3A	*Representativeness, equity, and efficacy of collaborative management systems ensured.*	3A
3B	*Resource user capacity effectively built to participate in co-management.*	3B
3C	*Community organizing and participation strengthened and enhanced.*	3C
Goal 4	**Management plan compliance by resource users enhanced**	**Goal 4**
4A	*Surveillance and monitoring of coastal areas improved.*	4A
4B	*Willingness and acceptance of people increased to behave in ways that allow for sustainable management.*	4B
4C	*Local ability and capacity built to use resources sustainably.*	4C
4D	*User participation in surveillance, monitoring, and enforcement increased.*	4D
4E	*Application of law and regulations adequately maintained or improved.*	4E
4F	*Access to and transparency and simplicity of management plan ensured and compliance fostered.*	4F
Goal 5	**Resource use conflicts managed and reduced**	**Goal 5**
5A	*User conflicts managed and/or reduced: 1) within and between user groups, and/or 2) between user groups and the local community or between the community and people outside it.*	5A

Information Provided For Each Indicator

(example: B3, page 67)

- Name of the indicator
- Goals/objectives related to indicator
- Difficultly rating: 1-5 *(see page 47)*
- What is…? *(definition)*
- Why measure it? *(purpose/rationale)*
- Requirements *(resources needed)*

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Indicator information *(cont'd)*

- How to collect the data *(methods)*
- How to analyze and interpret results
- Outputs
- Strengths and limitations
- Example from the field *(pilot MPA site)*
- Useful references

Results of Testing:
Pilot sites overview

- 21 MPA pilot sites volunteer to test guidebook
- small grants ($5 to $30k) to each site for costs
- 1 week training workshop provided (Sept 02)

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Getting There from Here: Key Steps

- Link goals and objectives for MPA sites
- Develop appropriate suite of effectiveness indicators for sites and networks (e.g. biophysical, *social, governance)*
- Develop common understanding of:
  - Expected measurable outcomes over different evaluation time-frames
  - Potential influence of external events or environmental variability
  - Application of results in adaptive management and policy context
- Develop capacity to:
  - Rigorously monitor and assess results
  - Objectively synthesize and interpret results for diverse audiences
  - Consistently store, manage and serve monitoring data

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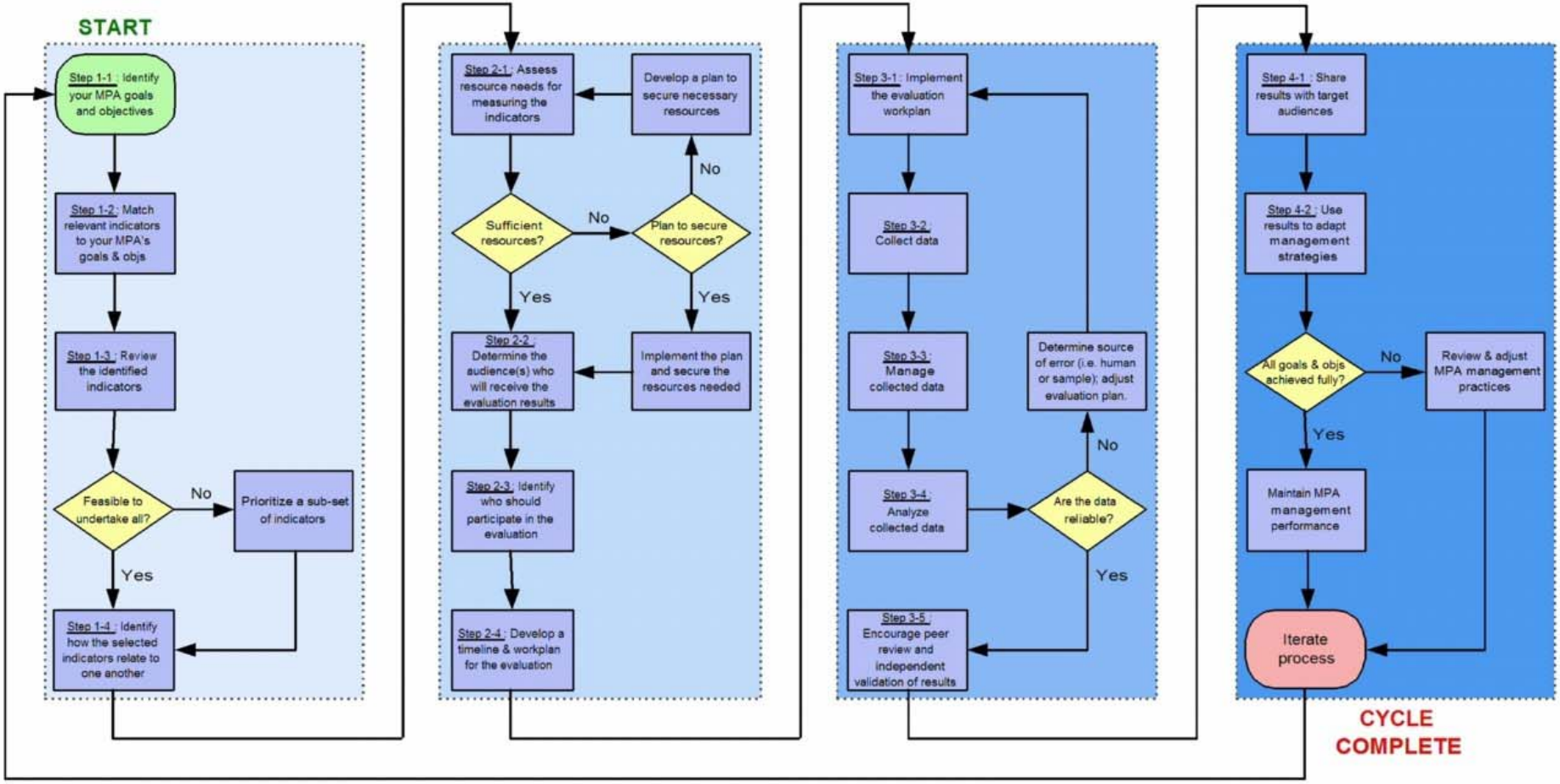

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