

自然保护区管理有效性评价方法的比较与应用

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摘要: 建立自然保护区是保护生物多样性的最重要的途径之一, 开展自然保护区管理有效性评价是了解自然保护区管理状况、提升保护区管理水平、实现保护区管理目标的有效途径。在国际自然保护联盟世界保护区委员会(WCPA)提出的保护区管理有效性评价框架的基础上, 世界上很多国家和组织机构根据本国的实际情况开发了更为详细的评价方法。这些方法可以归为4类, 包括基于证据的深入评价法、基于同行评定的综合评价法、基于专家知识的快速记分评价法, 以及基于假设的分类评价法。本文比较了这4类方法的应用范围、对象、目的、形式, 以及各类方法的优缺点及其适用条件, 总结了8种主要方法的评价指标的构成及其应用现状。在此基础上, 分析了自然保护区管理有效性评价方法在中国自然保护区中的应用及存在的问题, 并提出了适用于中国自然保护区管理有效性评价的方法及其评价指标构成。

关键词: 自然保护区, 管理有效性, 评价框架, 评价方法, 评价指标, 跟踪工具

Comparison and applications of methodologies for management effectiveness assessment of protected areas

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Abstract: Establishment of protected areas is one of the most important approaches for biodiversity conservation. Assessment of management effectiveness of protected areas is critical to understand the management situation, to improve the management level, and to achieve the management targets. Based on the World Commission on Protected Areas (WCPA) of IUCN framework for assessing management effectiveness of protected areas and protected area systems, specific assessment methodologies have been developed and implemented in many countries according to their own situations. The assessment methodologies are generally generalized into four types, including in-depth evidence-based assessments, comprehensive system-wide peer-based assessments, rapid expert-based scorecard, and categorical assumption-based assessments. In the present paper, we compare the four types in terms of application scales, targets, objectives, assessment forms, advantages, disadvantages and adaptable situations. Eight categories of methodologies are summarized in terms of the assessment indicators and current application status. On the basis of this analysis, applications and problems of the assessment methodologies in China are further discussed and a proper assessment indicator system is proposed.

Key words: protected area, management effectiveness, assessment framework, assessment methodology, assessment indicator, tracking tool

自然保护区是保护生物多样性的国家战略的基础(Howard *et al.*, 2000)。保护区的建立, 可以更有效地保护地区的生物多样性和土壤环境, 提升生态系统涵养水源与固碳的能力, 提高公众的环境意

识, 是实现社会经济可持续发展及人与自然和谐共存的重要保障(马建章, 1992; Liu *et al.*, 2001; Hockings *et al.*, 2005)。目前, 全球自然保护区的数量已超过10万个, 约占地球陆地面积的11.5% (Boitani *et*

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al., 2008)。根据2008年《中国环境状况公报》公布的数据, 中国自然保护区的数量已增至2,538个, 总面积148.9万km²。

为了保证自然保护区的管理质量, 需要对保护区的管理有效性进行评价, 即评估通过管理在多大程度上实现了保护价值和预期的保护目标, 主要评价与单个保护区及保护区系统相关的保护区设计与规划结果、管理体制及过程的充分性与合理性、保护区目标的达成度(Hockings *et al.*, 2006)。管理有效性评价是系统保护规划过程的重要组成部分(Margules & Pressey, 2000), 是将项目实施、规划与资金联系起来的重要环节(Hockings *et al.*, 2004b)。通过自然保护区管理有效性评价, 可以: (1)使保护区的价值得到保持; (2)在管理目标和管理行为之间建立更系统、更清晰的联系; (3)有助于改进规划; (4)提高管理工作中经费支配情况的透明度; (5)鼓励更合理的资源分配; (6)为保护区管理者、非政府组织(NGO)、政府、捐赠机构和社会公众提供更多的信息, 帮助政策制定者针对普遍的管理问题作出战略层次以及保护区系统范围的响应; (7)提升公众对保护区的认可程度(Hockings, 2000; Day *et al.*, 2002; Hockings *et al.*, 2004b)。

研究表明, 世界上很多保护区并没有得到有效的管理(Hockings *et al.*, 2002; 欧阳志云等, 2002; 余久华和吴丽芳, 2003), 相当一部分的保护区正面临保护价值退化甚至丧失的威胁(Stolton & Dudley, 1999; Hockings *et al.*, 2004a; Dudley *et al.*, 2004)。为了改善这一现状, 很多国家、地区和组织机构陆续

开展了对保护区管理有效性评价方法的理论研究与应用实践, 依据不同的评价目的、对象及应用范围, 建立不同的评价体系, 采用不同的评价方式对保护区的管理效果进行跟踪评价。本文着重介绍在世界保护区委员会(World Commission on Protected Areas, WCPA)评价框架基础上发展的评价方法, 比较了主要方法的特点、评价指标构成及应用实践, 针对我国的实际情况提出适宜的评价方法, 并调整了评价指标的构成, 以期为我国自然保护区管理有效性评价工作提供参考。

1 自然保护区管理有效性评价方法的分类比较

1.1 框架基础

自然保护区管理有效性评价的基础是保护区管理工作的过程。1997年世界保护区委员会(WCPA)依据保护区管理过程的6个要素, 提出了保护区管理有效性的评价框架(表1), 列出了各个要素的基本评价指标(Hockings, 2000; Hockings *et al.*, 2002)。每个要素的具体含义是: (1)背景要素, 包括广泛的政策环境, 提供帮助制定管理决策的信息; (2)规划要素, 即评价指标的选取取决于评价目的, 特别是基于保护区系统层次还是单个保护区层次; (3)投入要素, 评价达成管理目标所需资源的充足程度, 包括人员、资金、设备及设施; (4)管理过程要素, 关注保护区的日常管理问题以及社区、自然和文化资源的管理状况; (5)管理结果要素, 评价管理目标、工作项目或计划的实施程度, 关注是否按照

表1 世界保护区委员会(WCPA)保护区管理有效性的评价框架

Table 1 Framework of World Commission on Protected Areas for assessing management effectiveness of protected areas

关注问题 Focus	管理要素 Elements	评价标准 Criteria
设计问题 Design issue	背景 Context	重要性; 威胁; 脆弱性; 国家背景 Significance; threats; vulnerability; national context
	规划 Planning	保护区立法和政策; 保护区系统设计; 保护区设计; 管理计划 Protected area legislation and policy; protected area system design; reserve design; management planning
管理系统和过程的适宜性 Appropriateness of management systems and processes	投入 Input	管理机构的资源; 区内资源; 合作者 Resourcing of agency; resourcing of site; partners
	管理过程 Process	管理过程是否恰当 Suitability of management processes
保护区目标的传达 Delivery of protected area objectives	管理结果 Outputs	管理行动的结果; 服务和产品 Results of management actions; services and products
	效果 Outcomes	影响: 与目标相关的管理工作的效果 Impacts: effects of management in relation to objectives

计划开展行动以及在计划实施中取得了什么进展; (6)效果要素, 依照管理计划的目标来评价管理是否成功。效果评价需要长期监测, 包括系统/区域生物和文化资源, 社区经济, 系统/区域管理对社区的影响。在最终分析中, 效果评价是管理有效性的真实反映。

WCPA评价框架与保护区管理者所关心的问题联系密切, 可以应用于世界范围内的保护区的管理有效性评价工作中(Hockings, 2000)。这一评价框架不仅是各种具体的保护区管理有效性评价方法发展的基础, 而且对保护区管理效果评价报告的内容及标准的制定也具有启示作用。

1.2 评价指标的选取原则

评价指标的选择对于评价结果至关重要。评价指标应该满足以下要求(Hockings & Phillips, 1999; Hockings *et al.*, 2004b, 2005): 与评价特征有明确的、可预测的、能证实的联系; 对评价特征的变化反应敏锐; 能全面反映较长时空间隔的环境影响, 如环境变化过程中的状况而不是短期内或局部地区的波动; 反映变化和过程对管理工作的重要性, 包括生物物理、社会、文化、经济、政治和管理要

素; 反映管理工作在时间和空间尺度上的变化情况; 在数据收集、分析和阐释方面有合理的效率费用比; 能够简单地测度和说明; 能及时地收集、分析和报告。

1.3 评价方法的分类比较

WCPA框架列出了评价保护区管理效果时需要关注的问题以及评价项目, 但不能作为评价自然保护区管理有效性的唯一标准(Hockings *et al.*, 2002)。在此基础上, 世界上很多国家和组织机构根据具体情况构建了更为详细的评价指标体系(Hockings, 1998; Courrau, 1999; Cifuentes *et al.*, 2000; Ervin, 2003b)。其中应用比较广泛的评价方法大致可以分为4类(Ervin, 2006): (I)基于证据的深入评价法(in-depth evidence-based assessments); (II)基于同行评议的综合评价法(comprehensive system-wide peer-based assessments); (III)基于专家评议的快速记分评价法(rapid expert-based scorecard); (IV)基于假设的分类评价法(categorical assumption-based assessments)。这4类评价方法在应用范围、针对对象、评价目的和评价形式等方面均有差别(表2), 适用于不同的评价情况(表3)(Ervin, 2006, 2007)。

表2 自然保护区管理有效性评价方法的分类比较

Table 2 Comparison of four types of methodologies for assessing management effectiveness of protected area

方法 Methodology	应用范围 Scale	对象 Target	评价目的 Assessment objective	评价形式 Assessment form
I	单个保护区 Site-level	保护区管理者 Manager	评价管理活动达到预期管理目标的程度, 以提高监测水平 Assessing the degree to which management actions achieve specified management objectives and improving monitoring.	由保护区管理者实行, 衡量具有详细评价标准的主要预期成果的变化情况 The assessment that is operated by protected area manager is designed to measure changes in key desired outcomes with a detailed baseline.
II	特定保护区系统内的所有保护区 Each protected area within a given protected area system	政策制定者 Policy-maker	明确保护区系统面临的威胁、保护优先性及后续措施 Identifying the threats, conservation priority and follow-up steps.	通过召开参与式的座谈会, 依据调查问卷进行讨论评分 The assessment would hold an interactive workshop to evaluate the protected area effectiveness according to a questionnaire.
III	单个保护区 Site-level	保护区管理者及相关人员 Manager and related people	快速了解保护区的管理过程, 报告管理效果的进展 Providing a quick overview of the management steps and reporting progress on management effectiveness.	通过记分卡或者结构性问卷, 通常在每个保护区以访谈或者调查的形式进行 The assessment involves a scorecard or structured questionnaire and is generally applied to each protected area through an individual interview or survey.
IV	保护区系统 System-level	政策制定者 Policy-maker	对整个保护区系统的概括认知 Providing general information about an entire system but little or no information about variation within that system.	运用已有文献数据及专家意见对采集的数据进行分类评价 The assessment data are collected regarding an entire category or categories, based primarily on literature review and expert opinion.

I: 基于证据的深入评价法; II: 基于同行评议的综合评价法; III: 基于专家评议的快速记分评价法; IV: 基于假设的分类评价法。

I, In-depth evidence-based assessments; II, Comprehensive system-wide peer-based assessments; III, Rapid expert-based scorecard; IV, Categorical assumption-based assessments.

表3 自然保护区管理有效性评价方法优缺点的分类比较

Table 3 Advantages and disadvantages of four types of methodologies for assessing management effectiveness of protected area

方法 Methodology	优点 Advantages	缺点 Disadvantages	总体评价 General assessment
I	结果的可信度很高; 保护区人员及利益相关者的互动性很高; 提供可靠的和可重复的指标 Very high degree of confidence in results; very high levels of interaction with all levels of protected area staff and stakeholders; measurable and repeatable indicators.	需要投入大量的人力和资源, 耗费时间长 Very high investment of staffing and resources and long time required.	最适用制定特定的阈值与基准以提高监测水平 Best for developing specific thresholds and benchmarks for monitoring improvement.
II	结果的可信度较高; 可以为以后的评价工作提供基础; 在系统层次上分析保护区的威胁、薄弱环节和优先性 High degree of confidence in results; basis of future assessment; system-level analysis of threats, weaknesses and priorities.	缺乏生态完整性和保护区水平的具体指标, 通常不能为以后监测管理行为提供可度量的阈值 Lack of detailed index for ecological integrity and protected area management; does not generally result in measurable thresholds for monitoring future performance.	最适用于确定系统范围内面临的威胁, 需要优先保护的地理位置与策略及政策干预 Best for identifying system wide threats, weaknesses, geographic priorities and policy-level interventions.
III	较小的人力、资源投入; 耗时短 Low investment of staffing and resources and little time required.	非同行评定, 不适用于对保护区系统内不同保护区之间进行比较 Not peer-based assessment; is not well suited for comparisons across a protected area system.	最适用于对保护区管理有一个快速的了解, 跟踪多个保护区的总体进展情况 Best for developing a snapshot in performance and for tracking the overall general progress of many sites over time.
IV	人力和资源投入很少 Very low investment of staffing and resources.	缺乏野外工作人员的参与; 结果的可信度很低; 评价结果不能区分出同一类型的保护区在管理效果上的差异 Very low levels of interaction with field staff; very low degree of confidence in results; does not differentiate between different levels of management effectiveness within a single category.	最适用于在项目水平上确定优先投资的生物类群和区域, 应与其他评价方法结合运用 Best for prioritizing broad categories and geographies for investment at a programmatic level; best when used with other assessment types

I-IV表示4种不同的评价方法, 同表2。 I-IV correspond to the methodologies in Table 2

这四类评价方法已经广泛应用于世界范围内各类保护地的管理有效性评价中(表4)。在WCPA框架项目的基础上, 依据评价目的和对象等的不同, 选取和构建了不同的评价指标体系(表5), 定性或定量地描述自然保护区的管理状况, 对保护区的管理效果进行跟踪评价, 对保护地的建设和发展起到了积极的推动作用。

2 自然保护区管理有效性评价方法在中国的应用及建议

我国已经陆续开展了这方面的研究与实践工作: 薛达元和郑允文(1994)探讨并构建了我国自然保护区管理有效性的评价指标与评价标准, 并在管理条件、管理措施、科研基础和管理成效等4个方面提出13项评价指标; 栾晓峰等(2002)利用上述方法分析了影响上海崇明东滩鸟类自然保护区生态环境质量和有效管理的关键因子及保护区面临的主要问题, 并提出了相应的对策建议; 谢志红和徐

永新(2003)从保护区机构能力、长期管理工作、资金筹措和当地社区参与等4个方面选取了12项指标, 对湖南省62个自然保护区的管理有效性进行了评价; 姜立军等(2005)根据我国154个国家级自然保护区的问卷调查结果, 运用主成分分析法对26项管理评价指标进行了分析, 确定了6个主要指标类体系, 包括物资保障、监控管理、经济开发收益、管理权归属、行政执法和交流合作; 王双玲等(2005)介绍了保护区管理有效性跟踪工具(Tracking Tool)的开发基础、监测与评估内容、功能和局限性、案例应用与发展前景; 王琪等(2005)利用RAPPAM方法对吉林省25个自然保护区管理的整体情况进行了综合评价, 并针对存在的共性问题提出了建设性的解决措施; 莫燕妮和洪小江(2007)在RAPPAM方法的基础上对指标体系进行了调整, 从管理基础、管理机制、管理行为和管理效果等4个方面选取了29项指标, 对海南省林业系统自然保护区的总体管理有效性进行了评价; 刘义等(2008)利用RAPPAM

表4 自然保护区管理有效性评价的主要方法及其应用

Table 4 Applications of main methodologies for assessing management effectiveness of protected area

方法 Methodology	主要方法 Main methodology	应用 Application	参考文献 References
I	UNESCO/IUCN的“增加我们的遗产价值—世界自然遗产地成效的监测与管理”项目开发的评价方法。 Assessment tool developed by the “Enhancing Our Heritage—Monitoring and Managing for success in Natural World Heritage Sites”UNESCO/IUCN project	此方法已在非洲、南亚和拉丁美洲的9个世界自然遗产地实施, 测试评价工具、资助监测活动和适宜的管理行动 The project tested assessment tools and funded monitoring activities and adaptive management interventions in nine natural World Heritage Sites in Africa, South Asia and Latin America.	Hockings <i>et al.</i> , 2002, 2007; Mathur <i>et al.</i> , 2007
II	世界自然基金会编制的自然保护区管理快速评估和优先性确定方法 Assessment tool developed by “Rapid Assessment and Prioritization of Protected Area Management (RAP-PAM) Methodology” WWF project	已应用到45个国家的1,500多个保护区 The methodology has been applied in over 1,500 protected areas across 45 countries.	Ervin, 2003b., 2007; Hockings <i>et al.</i> , 2005
III	由“受威胁的公园项目”建立的评价方法 Assessment tool developed by “Parks in Peril Program” project	为拉丁美洲和加勒比海地区17个国家、面积超过2,700万公顷地方的保护及长期管理工作提供了支持 The program has supported protection and long-term management of more than 27 million hectares in 17 countries across Latin America and the Caribbean.	Hockings, 2000; The Nature Conservancy (TNC), 2004
	由“中美洲地区环境项目”建立的评价方法 Assessment tool developed by “Proyecto Ambiental Regional de Centro America, PROARCA” program	应用于中美洲的巴拿马、洪都拉斯、萨尔瓦多、尼加拉瓜、危地马拉、哥斯达黎加 The program has been applied in Panama, Honduras, Salvador, Nicaragua, Guatemala, Costa Rica across Central America.	Courrau, 1999; Hockings, 2000; Hockings <i>et al.</i> , 2005
	WWF中美洲办公室和热带农业调查和教育中心合作发展的保护区管理的评价方法 Assessment tool developed by “WWF/ The Agricultural Center of Tropical Investigation and Teaching (CATIE)” project	该系统已在巴西、哥斯达黎加、厄瓜多尔和危地马拉得到检验 The methodology has been tested in Brazil, Costa Rica, Ecuador and Guatemala.	Hockings, 2000; Cifuentes <i>et al.</i> , 2000
	世界银行/世界自然基金会跟踪工具 World Bank (WB)/WWF “Tracking Tool”	欧洲、亚洲、非洲和拉丁美洲51个国家的331个自然保护区; Ramsar公约保护下的8个湿地; 总面积超过5,000万公顷 Tracking Tool have been implemented at 331 sites in 51 countries within Africa, Asia, Europe, and Latin America, and 8 wetlands protected by Ramsar Convention, covering a total area of over 50 million hectares.	Stolton <i>et al.</i> , 2003, 2007; Lacerda, 2004; Chatterjee & Pittock, 2005; Dudley <i>et al.</i> , 2007
II	大自然保护区协会分类评估方法 The Nature Conservancy “Categorical Assessment”	南美大陆所有保护区 The methodology has been used in all protected areas across the South American continent.	Hockings, 2000; Ervin, 2006
	空缺法 Gap Plus	对科罗拉多州各类公共和私有土地的管理效果打分 The methodology has been used to establish a score of management effectiveness of various types of public and private land management within Colorado.	Ervin, 2006, 2007; Supples <i>et al.</i> , 2006

I-IV表示4种不同的评价方法, 同表2。 I-IV correspond to the methodologies in Table 2

方法对北京20个保护区进行了问卷调查与分析, 探明了保护区面临的威胁和压力, 并提出了提高保护区管理有效性的对策建议。

可以看出, 我国自然保护区管理有效性评价工作已逐渐开始应用当前国际上比较成熟的概念和方法, 但还处于发展阶段, 应用的范围不广泛, 而且对于如何选用合适的评价方法以及适合的评价项目还不明确。因而, 现阶段所开展的评价工作仅

停留在照搬国外方法的层次上, 部分评价项目与我国自然保护区管理的实际情况相关度不高, 影响了评价结果的针对性(权佳等, 2009a)。

我国的自然保护区事业经过几十年的建设, 已经取得了很大的成效, 自然保护区的数量已经超过了总体规划中2010年的发展目标(欧阳志云等, 2002; 喻泓等, 2006)。但随着保护区的进一步发展, 保护区的管理也暴露出越来越多的问题, 如土地权

表5 自然保护区管理有效性主要评价方法的评价指标

Table 5 Assessment indicators of main methodologies for assessing management effectiveness of protected area

方法 Methodology	评价指标 Assessment indicators	参考文献 References
Enhancing Our Heritage	(1)背景: 明确区域的保护价值和威胁, 利益相关者的关系, 国家背景资料评估; (2)规划: 管理规划评价, 设计评价; (3)投入: 管理需求和投入评价; (4)管理过程: 管理过程持续改进评价; (5)管理结果: 管理计划实施评价; (6)成果: 生态完整性, 主要目标的达成程度。 (1) Context: identifying site values and threats, engagement of stakeholders, review of national context; (2) Planning: assessment of management planning, design issues; (3) Inputs: assessing management needs and inputs; (4) Management process: assessing continuous improvement of management processes; (5) Management outputs: management plan implementation; (6) Outcomes: Ecological integrity assessment, achievement of main objectives.	Hockings <i>et al.</i> , 2002, 2007; Mathur <i>et al.</i> , 2007
RAPPAM Methodology	(1)背景: 威胁, 生物学重要性, 社会经济重要性, 脆弱性, 保护区政策, 政策环境; (2)保护区设计与规划: 目标, 法律保障, 保护区设计与规划, 保护区系统设计; (3)投入: 人员, 通讯和信息, 基础设施, 资金; (4)管理过程: 管理规划, 管理措施, 研究、监测和评价; (5)管理成果: 威胁/预防, 区域恢复, 野生动植物管理, 社区服务, 游客管理, 基础设施建设, 规划实施, 监测, 培训, 科研; (6)成果: 压力 (1) Context: threats, biological importance, socio-economic importance, vulnerability, PA policies, policy environment; (2) PA design and planning: PA objectives, legal security, site design and planning, PA system design; (3) Inputs: staff, communication and information, infrastructure, finance; (4) Management processes: management planning, management practices, research, monitoring and evaluation; (5) Management outputs: threats prevention, site restoration, wildlife management, community outreach, visitor management, infrastructure outputs, planning outputs, monitoring, training, research; (6) Outcomes: pressures.	Ervin, 2003b, 2007; Hockings <i>et al.</i> , 2005
Parks in Peril Program	(1)基础保护行动: 物质基础设施, 现场人员, 培训, 土地权属问题, 威胁分析, 保护区官方地位; (2)长期管理: 功能区划和缓冲区管理, 区域长期管理计划, 监测计划的发展与实施; (3)长期经费支持: 非政府组织自给计划, 受威胁公园长期经费计划; (4)地方支撑: 具广泛代表性的管理委员会/技术咨询委员会, 社区参与协调资源的使用, 在国家/区域/地区水平上的政策议程进展, 环境宣教项目。 (1) Basic protection activities: physical infrastructure, on-site personnel, training, land tenure issues, threats analysis, official PA status; (2) Long-term management: zoning and buffer zone management, site-based long-term management plan, monitoring plan development and implementation; (3) Long-term financing: NGO self-sufficiency plan, Parks in Peril site long-term financial plan; (4) Site constituency: broad-based management committee/technical advisory committee, community involvement in compatible resource use, development of policy agenda at national/regional/local levels, environmental education programs.	Hockings, 2000; TNC, 2004
PROARCA program	(1)社会: 交流, 参与, 宣教, 土地权属; (2)行政管理: 基础设施, 人员, 规划; (3)自然与文化资源: 利用, 保护, 知识, 环境监测; (4)政治—法律: 法律框架, 机构框架; (5)经济/财政: 自身可持续性, 产品和服务的产出, 收益。 (1) Social: communications, participation, education, land tenure; (2) Administrative: infrastructure, personnel, planning; (3) Natural and cultural resources: use, protection, knowledge, environmental monitoring; (4) Political—legal: legal framework, institutional framework; (5) Economic/financial: self sustainability, production of goods and services, benefits.	Courrau, 1999; Hockings, 2000; Hockings <i>et al.</i> , 2005
CATIE	(1)管理: 人员, 经费, 组织机构, 基础设施; (2)政策: 社区支持与参与, 内部制度支撑, 外部支撑; (3)法律: 土地权属, 一般法律和法规, 保护区法规; (4)规划: 保护区管理计划, 管理计划与其他计划和组织的协调性, 年度工作计划, 规划的层次、功能区划、边界; (5)信息: 社会经济信息, 生物物理信息, 地理信息, 法律信息, 研究, 监测与反馈, 传统知识; (6)管理项目: 研究, 环境教育, 环境宣传, 保护, 维护, 影响社区; (7)非法利用: 伐木, 不可更新自然资源的利用, 动植物资源和文化资源的开发, 盗猎, 农业和畜牧业, 渔业, 娱乐与旅游, 设施建设; (8)合法利用: 伐木, 矿产资源的利用, 动植物资源的利用, 占用, 狩猎, 农业和畜牧业, 渔业, 娱乐与旅游, 宣教, 房屋建设; (9)生物地理特征: 形式、大小, 隔离性, 脆弱性; (10)威胁: 游客影响, 污染, 火灾、人类居住区的扩展, 外来物种, 引入生物, 自然灾害, 基础设施建设, 破坏活动和暴力冲突, 贩毒。 (1) Administrative: personnel, financing, organization, infrastructure; (2) Policies: community support and participation, inner-institutional support, external support; (3) Legal: land tenure, general laws and regulations, law establishing PA; (4) Planning: PA management plan, compatibility of management plan with other plans and organizations, annual operating plan, level of planning, zoning, boundaries; (5) Information: socio-economic information, biophysical information, cartographic information, legal information, research, monitoring and feedback, traditional knowledge; (6) Management programs: research, environmental education, environmental interpretation, protection, maintenance, outreach to the communities; (7) Illegal uses: extraction of timber, extraction of non-renewable natural resources, extraction of flora and fauna, extraction of cultural resources, squatting, poaching, agriculture and cattle ranching, fishing, recreation and tourism, building of infrastructure; (8) Legal uses: timber extraction, extraction of mineral resources, extraction of flora and fauna, hunting, agriculture and cattle ranching, fishing, recreation and tourism, education, building construction; (9) Biogeographical characteristics: form, size, isolation, vulnerability; (10) Threats: visitor impact, pollution, fires, advancing human settlements, immigration, introduced organisms, natural disasters, development infrastructure, subversive movements and violent conflict, narco-trafficking.	Hockings, 2000; Cifuentes <i>et al.</i> , 2000

表5 (续) Table 5 (continued)

方法 Methodology	评价指标 Assessment indicators	参考文献 References
Tracking Tool	(1)背景: 法律地位; (2)规划: 保护区条例, 保护区目标, 保护区设计, 管理计划, 日常工作计划, 土地和水资源利用规划, 监测与评价; (3)投入: 法律实施, 资源调查, 员工数量, 人员培训, 本期预算, 预算的可靠性, 设备, 费用; (4)过程: 保护区边界的确定, 保护体系, 研究, 资源管理, 人员培训, 预算管理, 设备的维护, 宣教项目, 政府及商业伙伴, 原住民, 当地社区, 监测与评价, 旅行社, 门票和罚款收入; (5)结果: 日常工作计划, 旅游服务设施, 收入对保护区管理的帮助程度; (6)效果: 保护体系, 经济收益评估, 价值现状评估。 (1) Context: legal status; (2) Planning: PA regulations, PA objectives, PA design, management plan, regular work plan, planning for land and water use, monitoring and evaluation; (3) Input: law enforcement, resource inventory, staff numbers, staff training, current budget, security of budget, equipment, fees; (4) Process: PA boundary demarcation, protection systems, research, resource management, staff training, management of budget, maintenance of equipment, education and awareness, state and commercial neighbors, indigenous people, local communities, monitoring and evaluation, commercial tourism operators, fees; (5) Outputs: regular work plan, visitor facilities, fees; (6) Outcome: protection systems, economic benefit assessment, condition of values.	Stolton <i>et al.</i> , 2003, 2007; Lacerda, 2004; Chatterjee & Pittock, 2005; Dudley <i>et al.</i> , 2007
Categorical Assessment	(1)生物学重要性: 具生态代表性的保护区网络, 植被覆盖率, 片断化程度; (2)资金可持续性: 财务计划及机制, 有经验的职工; (3)法律地位: 土地权属, 社会参与性, 法律/机构状况; (4)管理/监测: 管理计划, 监测计划, 野外工作人员; (5)政策: 保护区与国家和地方规划过程之间的联系, 系统内土地所有权类型, 所有权的承认; (6)能力: 国家级保护地管理机构的能力, 保护地管理, 国家层面上的能力建设计划。 (1) Biological relevance: ecologically representative network of PAs, vegetation cover, level of fragmentation; (2) Financial sustainability: financial plans and mechanisms, skilled staff; (3) Legal: land tenure, social participation, legal/institutional aspects; (4) Management/monitoring: management plans, monitoring plans, field staff; (5) Policy: relation of PAs with national and sub-national planning processes, types of land ownership within the PA system, social recognition of tenure; (6) Capacity: capacity of the National PA Agency, site management, national capacity building plan.	Hockings, 2000; Ervin, 2006
Gap plus	(1)背景: 社会背景, 地理背景, 生物多样性损失的类型、程度和持续时间; (2)法律框架: 生物多样性保护的持续性, 土地所有权和使用权, 生物多样性管理与其他目标的协调; (3)生物多样性规划: 管理计划, 资源本底调查协议, 与生物多样性管理相关人员的参与; (4)管理资源: 达成生物多样性管理相关目标所需人力、财力和基础建设资源; (5)监测: 确定生物多样性相关研究需求的能力, 对生物多样性状况的了解, 将监测与管理决策结合; (6)资源利用: 使娱乐、旅游、资源开发与生物多样性保护目标统一, 充足的生物多样性保护用地; (7)关键管理行为的实施: 法律实施, 威胁监测和预防, 充分的保护和恢复生物多样性的措施。 (1) Context: social context, geographic context, type, magnitude and duration of impairments to biodiversity; (2) Legal framework: legal permanency of biodiversity protection, land tenure and use rights, compatibility of biodiversity management with other objectives; (3) Planning for biodiversity: management plan, biological resource inventory protocols, stakeholder participation in relation to biodiversity management; (4) Management resources: human resources, financial resources and infrastructural resources sufficient to achieve biodiversity related management objectives; (5) Monitoring: capacity to identify biodiversity-related research needs, awareness of biodiversity condition/viability, incorporation of monitoring into management decisions; (6) Resource use: recreation and visitor use and resource harvesting activities consistent with biodiversity related objective, adequacy of land use zones in protection biodiversity related resources; (7) Implementation of critical management activities: law enforcement, biodiversity related threat detection, mitigation and prevention, adequacy of critical conservation actions in maintain and restoring biodiversity.	Ervin, 2006, 2007; Supples <i>et al.</i> , 2006

属和林权、边界、保护与开发的平衡、保护区与社区的矛盾、机构设置与人员素质问题等, 实施保护区管理有效性评价是提高保护区管理质量的有效途径。2008年, 我国由七部委联合下发《关于开展国家级自然保护区管理评估工作的通知》(环办[2008]19号), 并已对华东六省一市的国家级自然保护区的管理工作进行了评估(郑海洋等, 2009)。

通过对前面4类评价方法的比较, 并考虑到可操作性, 建议采用投入较少的WWF/WB跟踪工具(Tracking Tool), 针对单个保护区建立长期管理数据, 并结合我国自然保护区的实际情况对评价项目

构成进行调整。调查表由基本信息表和自然保护区管理能力与效果评分表(以下简称评分表)(表6)两部分组成。基本信息表包括保护区级别、地理位置、建立时间、面积、核心区面积、主管部门、保护目标与保护对象、主要威胁和任务; 评分表包括31个评价项目和7个附加项目, 从自然保护区的管理基础、管理机制、管理行为和管理效果4个方面进行综合评价。依照WB/WWF跟踪工具的方法, 表6中的31个评价项目各有4个状态描述, 由差到极好分别赋予0-3分; 附加项目有是/否2个状态描述, 分值为1/0。然后计算总得分, 进而明确保护区的优势与

表6 中国自然保护区管理能力与效果调查评分表

Table 6 Scorecard for investigating management capacity and effectiveness of nature reserves in China

评价方面 Assessment aspect	评价项目 Assessment indicators	评价内容 Content
管理基础(管理能力) Management base (management capacity)	保护区机构、公安机构建设、保护区边界、员工数量、工资与福利、事业费、基础设施。 Management agency, police agency, reserve boundary, staff number, salary and other benefits, budget sources for protection activities, and infrastructure	保护区在机构、职工、经费、设备与设施等方面的条件与状况。 Focusing on the condition and status of agencies, staffs, budget, equipment, and facilities in a reserve.
管理机制 Management mechanism	管理体制(附加项目: 保护区纳入生态公益林补偿和天然林保护项目)、土地/林权、保护区管理办法、行政执法权、人事管理、社区参与、管理计划、监测和评价。 Management system (Additional points: reserve is a part of the "Ecological Public-welfare Forest Compensation and Natural Forest Protection Project"), land/forest authorities, regulations, administrative law-enforcing authorization, personnel management, community involvement, management plan, monitoring and evaluation.	保护区在管理条例、管理计划、管理目标确定、收费的分配机制、与当地居民、周边居民和社区及其他相关机构、部门、企业等的协调方式与机制。 Focusing on the determination of management regulations, management plans and management objectives and the allocation of charges in a reserve, and on the coordinative manner and mechanism between the reserve and local residents, neighboring residents and communities and other relevant agencies, departments and enterprises, etc.
管理行为 Management behavior	保护对象的管理、总体规划(附加项目: 保护区与社区没有土地/林权纠纷)、资源调查、科研(附加项目: 独立主持过科研项目, 并且目前有在研项目)、资源管理、资源监测(附加项目: 过去3年没有发生火灾; 没有引进外来物种; 过去3年没有发生盗伐与偷猎保护对象的案件)、职工培训、经费管理、设备使用和维护、宣传教育(附加项目: 过去3年内执行过国际交流合作项目)、社区共管、旅游管理(附加项目: 保护区内旅游宾馆、饭店等设施齐全, 游客食宿方便)、保护区巡护。 Management of protection targets, master plan (additional points: without any land and forest conflicts between reserve and local communities), resource and biodiversity investigation, research (additional points: reserve has presided over research projects independently; moreover, some are in process now), resource management, resource monitoring (additional points: there is no forest / grassland fires in last 3 years in the reserve. No species are introduced into the reserve. No illegal logging, hunting and other damage events to protection targets in last 3 years in the reserve), staff training, budget expending and management, use and maintenance of equipment, education and awareness (additional points: there are international exchange projects during last 3 years), community co-management, tourism management (additional points: there are complete facilities in the reserve such as travel hotels and restaurants that provide tourists with convenience), patrol in reserve.	关注保护区员工为实现保护目标和保护区功能所采取的活动, 例如保护区规划, 边界确定, 巡护, 员工培训, 资源调查, 科研与监测等。 Focusing on the activities launched by reserve staffs to realize protective objectives and reserve functions, e.g. reserve planning, boundary determination, patrol, staff training, resource survey and working status of scientific researches and monitoring, etc.
管理效果 Management effectiveness	保护状况(附加项目: 在保护区或保护区缓冲带的退化地区有积极的生态恢复项目)、保护区控制、保护区与社区的协调发展。 Condition assessment (additional points: there are active programs for restoration of degraded areas within the protected area and/or the protected area buffer zone), reserve control, coordinative development between reserve and community.	评价保护对象的状况, 保护区资源管理与保护状况, 对周边社区与区域经济发展的影响等。 Focusing on the status of protection targets, the status of resource management and protection in a reserve and the impact on neighborhood and regional development in economy, etc.

薄弱环节。2005年, 我们运用此调查表对中国535个自然保护区进行了问卷调查, 评价结果基本反映出中国自然保护区的管理现状, 说明此评价方法及评价项目构成对我国自然保护区的适用性(权佳等, 2009b)。

3 结论

自然保护区管理有效性评价的根本目的是改善与提高保护区的管理水平和管理能力。国际上已经开发了很多评价方法, 但鉴于国情以及保护区情况的差异, 需要建立符合中国实际的评价指标体

系。本文提出的评价项目体系对于管理有效性评价工作在中国自然保护区的开展是有实际价值的。

研究发现,自然保护区管理有效性评价目前也存在一些亟待解决的问题:缺乏统一的理论基础(Ervin, 2003a);没有一个全球通用的保护区有效性评估体系(Dudley *et al.*, 2004);作为保护区重要组成部分的生态完整性评价指标还不完善等(Hockings *et al.*, 2004a)。这些都需要我们在实践中加以改进和完善。在今后的保护区管理工作中,我们应尽可能将保护区管理有效性评价作为保护区系统保护规划过程的重要组成部分和管理过程的常规组成部分(Margules & Pressey, 2000; Hockings *et al.*, 2002; Hockings, 2003; Pomeroy *et al.*, 2005)。

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