

**City of Pasadena ~ Hahamongna Annex
Comments and Responses**

Commenter's Name	Organization	Comment Number	Response
Garrett, Laura	Pasadena Audubon Society	PAS-1	Introductory statements are made no response is necessary.
Garrett, Laura	Pasadena Audubon Society	PAS-2	<p>Species of Special Concern were given due consideration. In the Initial Study, the terms "rare, threatened, and endangered" correspond to CEQA's Mandatory Findings of Significance and can include Species of Special Concern. Species of Special Concern may meet CEQA's definition of "Endangered, Rare and Threatened Species" (see CEQA Guidelines Section 15380), but in some cases do not.</p> <p>Regardless of the status of the noted species, impacts on bird species were assessed on the master plan level and found to be less than significant with the required compliance with the Migratory Bird Treaty Act and Sections 3503-3517 of the California Fish and Game Code. The season of concern for all bird species identified by the commenter is the breeding season. In compliance with the Migratory Bird Treaty Act, at a minimum, the City is required to conduct nesting bird surveys prior to commencing clearing, grubbing, or structural demolition during the breeding season. Any active nests found would require avoidance through the establishment of a buffer zone.</p> <p>Additionally, prior to implementing any specific improvement identified in the proposed Master Plan Addendum, the City is required to conduct a project-level CEQA review. See response to comments PAS-3 and PAS-4 for further details in this regard.</p>
Garrett, Laura	Pasadena Audubon Society	PAS-3	<p>See response to comment PAS-2. Comprehensive biological surveys of the Hahamongna Master Plan area - including the Annex site - were conducted as part of the Master EIR process. Surveys conducted included general biological surveys and focused surveys, which included:</p> <ul style="list-style-type: none"> - <i>Focused Presence/Absence Surveys for Arroyo Toad and Mountain yellow-legged Frog for the Arroyo Seco Master Plan.</i> AMEC Earth & Environmental, Inc. 24 September 2004 (Multiple site surveys conducted during the months of April-June, 2004) - <i>Focused Herpetological Surveys Conducted in Support of the Arroyo Seco Master Plan.</i> AMEC Earth & Environmental, Inc. 21 January 2002/Revised 27 March 2002 (Multiple site surveys conducted during the months of February-June, and September, 2001)

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			<p>- <i>Rare Plant Community and Rare Plant Surveys for the Arroyo Seco Master Plan.</i> AMEC Earth & Environmental, Inc., 14 January 2002 (Ten separate field surveys were conducted during all four seasons, throughout 2001)</p> <p>- <i>Arroyo Seco Master Plan, Focused Surveys for Least Bell's Vireo, Southwestern Willow Flycatcher, and California Gnatcatcher in 2001.</i> AMEC Earth & Environmental, Inc. 21 November 2001 (Multiple site surveys conducted during the months of March-July, 2001)</p> <p>- <i>Survey of lower Arroyo Seco from Just Above Jet Propulsion Laboratory Downstream to the San Rafael Road Bridge with Particular Reference to Native Freshwater Fishes.</i> AMEC Earth and Environmental, Inc. August 3, 2001 (Field surveys conducted on May 31 and August 3, 2001)</p> <p>In addition, as detailed in the response to comment PAS-4 below, the City will undertake project-level CEQA review on a project-by-project basis. At the time of project-level CEQA review, the City would be required to undertake any biological surveys that are warranted for the project under consideration at that time. In addition, at a minimum, the City is required to conduct pre-construction sensitive plant surveys in accordance with Mitigation Measure Biological-1 and is required to conduct nesting bird surveys prior to commencing clearing, grubbing, or structural demolition during the breeding season in accordance with the Migratory Bird Treaty Act and Sections 3503-3517 of the California Fish and Game Code.</p> <p>In regards to the Pasadena Audubon Society counts noted by the commenter, the City would be interested in obtaining this data for use in project level analysis.</p>

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Garrett, Laura	Pasadena Audubon Society	PAS-4	<p>The current Initial Study is a program-level CEQA document that evaluates potential environmental impacts at the master plan level. CEQA requires that prior to implementing any specific improvement identified in the Master Plan Addendum, the City conduct project-level CEQA analysis. In the City's project development process the first step is establishing a master plan that identifies the City's vision for a site. Once a master plan is adopted, the City can begin to consider implementing specific improvements identified in the master plan. Implementing improvements is dependent on multiple factors, including inclusion in the City's Capital Improvement Program, need, and available funding. At the time a project is considered for implementation, the City will undertake detailed design, prepare the appropriate plans and specifications, and conduct project-level CEQA review. In response to the commenter's questions, when a specific project has the potential to impact biological resources, the City would have the appropriate biological surveys conducted by qualified professionals as part of the project-level CEQA review process. Pursuant to CEQA, the appropriate consideration will be given to all bird species.</p>
Garrett, Laura	Pasadena Audubon Society	PAS-5	<p>The Initial Study evaluated potential impacts on wildlife at the master plan level, including potential indirect impacts from special events, such as noise, lighting, etc. Under the proposed Master Plan Addendum, special events will require a discretionary permit from the City, which will require appropriate project-level CEQA consideration prior to issuance of the permit. Consideration of impacts on wildlife will be undertaken at the project-level as appropriate.</p>
Garrett, Laura	Pasadena Audubon Society	PAS-6	<p>The Disc Golf course is outside of the Annex site and the comment not germane to the proposed Master Plan Addendum. Refer to the adopted Hahamongna Watershed Park Master Plan for information regarding the configuration of the Disc Golf Course. See also response to comment PAS-4 for additional information regarding project implementation.</p>
Garrett, Laura	Pasadena Audubon Society	PAS-7	<p>The referenced parking area is outside of the Annex site and the comment not germane to the proposed Master Plan Addendum.</p>

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Garrett, Laura	Pasadena Audubon Society	PAS-8	Comments and concerns are noted. Please refer to response to comment PAS-4 for additional information regarding project implementation and response to comment PAS-6 for disc golf related inquires.
Garrett, Laura	Pasadena Audubon Society	PAS-9	Conclusory remarks are made. No response is necessary.
Larner, Douglas and Carolynn		DCL-1	Introductory statements are made no response is necessary.
Larner, Douglas and Carolynn		DCL-2	Comments and concerns are noted. The commenter's references to "a roadway around Hahamongna" and the Spirit of the Sage Council settlement are not germane to the proposed Master Plan Addendum.
Larner, Douglas and Carolynn		DCL-3	Question is not germane to the proposed Master Plan Addendum.
Larner, Douglas and Carolynn		DCL-4	Conclusory remarks are made. No response is necessary.
Tinkham, Debbie	La Canada Flintridge Trails Council	LCTC-1	Introductory statements are made no response is necessary.
Tinkham, Debbie	La Canada Flintridge Trails Council	LCTC-2	Suggestion is noted.
Tinkham, Debbie	La Canada Flintridge Trails Council	LCTC-3	Support for the oak woodland perimeter trail and the Sub-Trail Option 1 proposed by the Friends of Hahamongna is noted.
Tinkham, Debbie	La Canada Flintridge Trails Council	LCTC-4	Comments and concerns are noted. Trail recommendations reflect the design criteria established through a community-led planning process and the recommendations of City Commissions and Council. The City has evaluated all of the trail alternatives presented to date. Those alternatives that met the established design criteria were evaluated in greater detail. The "no change" alternative identified by the commenter does not meet the established design criteria. The suggestion for surfacing products has been noted.

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Commenter's Name	Organization	Comment Number	Response
Tinkham, Debbie	La Canada Flintridge Trails Council	LCTC-5	Comment is not germane as it describes a condition that is not a part of the proposed Master Plan Addendum.
Tinkham, Debbie	La Canada Flintridge Trails Council	LCTC-6	Comment noted. As shown in Table 4.2 of the Initial Study, there are 19 trees within the alignment of the evaluated bikeway - 17 of which are non-native and the other 2 are scheduled for removal for maintenance/safety issues.
Tinkham, Debbie	La Canada Flintridge Trails Council	LCTC-7	Conclusory remarks are made. See pages 1-3, 1-4, and 5-1 of the Initial Study for a discussion of the appropriate CEQA documentation for the proposed Master Plan Addendum and the City's determination thereabout.
Thomas, Dale	Rose Bowl Riders	RBR-1	Introductory statements are made. No response is necessary.
Thomas, Dale	Rose Bowl Riders	RBR-2	The proposed Equestrian Center would be a public facility. The normal hours of operation have not been determined to date. The details of gates and fencing will be determined at the time the City undertakes detailed design and prepares the appropriate plans and specifications. The referenced goal of the Master Plan Addendum addresses all public access throughout the Annex site. The paragraph on pg. 3-19 of the Master Plan Addendum has been revised to read, "Eliminate/relocate any impediments, such as locked gates during <u>normal operating hours</u> at the primary entrance to the public equestrian area..."
Thomas, Dale	Rose Bowl Riders	RBR-3	Request noted. Detailed design, plans, and specifications have not been prepared to date.
Thomas, Dale	Rose Bowl Riders	RBR-4	Comment noted. Detailed design, plans, and specifications have not been prepared to date.
Thomas, Dale	Rose Bowl Riders	RBR-5	Actual quantities of existing improvements requiring relocation have not been determined to date. Such information will be determined in coordination with the tenant when detailed design, plans, and specifications are prepared.

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Thomas, Dale	Rose Bowl Riders	RBR-6	For planning and analysis purposes, the Master Plan Addendum and Initial Study consistently recognize the potential expansion of the Annex's horse boarding capacity to a maximum of 70 animals. The actual number of animals and type/amount of support apparatus will be determined by the boarding facility's tenant.
Thomas, Dale	Rose Bowl Riders	RBR-7	Comment noted.
Thomas, Dale	Rose Bowl Riders	RBR-8	Comment noted. The proposed Master Plan Addendum recommends the inclusion of a bikeway only along the northern edge of the equestrian area. Exhibit 3-4 of the Master Plan Addendum erroneously included both existing and proposed conditions. The Exhibit has been revised to reflect the proposed condition.
Thomas, Dale	Rose Bowl Riders	RBR-9	Comment noted.
Thomas, Dale	Rose Bowl Riders	RBR-10	The proposed Master Plan Addendum does not include the referenced trail. The bikeway in the subject area included in the Master Plan Addendum has a maximum width of 10 feet.
Thomas, Dale	Rose Bowl Riders	RBR-11	Comment noted.
Thomas, Dale	Rose Bowl Riders	RBR-12	Concerns are noted. Detailed design, plans, and specifications have not been prepared to date and will be prepared in consultation with the facility's tenant.
			For planning and analysis purposes, the Master Plan Addendum and Initial Study recognize the potential to expand the Annex's horse boarding capacity up to a maximum of 70 animals. The commenter's reference to the introductory language on pg. 1-2 of the Initial Study is taken out of context. The potential expansion of horse boarding capacity is identified in Chapter 2 <i>Project Description</i> of the Initial Study (see pg. 2-21) and the corresponding potential environmental impacts are analyzed in Chapter 3 <i>Environmental Checklist Form</i> .
Thomas, Dale	Rose Bowl Riders	RBR-13	Table 2.3 of the Initial Study has been revised to list the Jumping Arena and the Upper Barn (#15) in the "Equestrian Boarding Area" row.
			The guest horse stalls referenced by the commenter were not listed in Table 2.3 because they are temporary, portable pens.
Thomas, Dale	Rose Bowl Riders	RBR-14	Conclusory remarks are made. No response is required.

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Commenter's Name	Organization	Comment Number	Response
Bowles, Hugh	Hahamongna Watch	HWV-1	Introductory comments are made. No response is required.
Bowles, Hugh	Hahamongna Watch	HWV-2	The proposed HMP Addendum does not include a trail along the northern edge of the equestrian area. Additional comments and observations noted.
Bowles, Hugh	Hahamongna Watch	HWV-3	The bikeway in the proposed HMP Addendum reflects the City Council approved conceptual plan and directive to route a bikeway through the Annex (April 30, 2007). The conceptual plan approved by the City Council was the result of a design process that actively engaged the public.
Bowles, Hugh	Hahamongna Watch	HW-4	Comments noted. See response to comment PAS-4 for a discussion of specific project scheduling and implementation. Commenter asks a question related to park operation, which is not germane to the master plan approval at hand.
Bowles, Hugh	Hahamongna Watch	HW-5	Special event applications are reviewed on a case by case basis. It is not known at this time what special event requests will be submitted to the City. Special event applicants are required to pay fees unless the proposed event is co-sponsored by the City. At this time, it is anticipated that funding for the City's maintenance of this area will come from the General Fund revenues. The City has not formed partnerships for the maintenance or operation of areas or facilities within the proposed plan. The Arroyo Seco Foundation, Outward Bound Los Angeles and the Rose Bowl Riders have contacted the City about partnerships to assist with running and / or maintaining portions of the Annex property.
Bowles, Hugh	Hahamongna Watch	HW-6	Commenter asks questions related to park funding, which is not germane to the master plan approval at hand.
Bowles, Hugh	Hahamongna Watch	HW-7	See response to comments PAS-2, PAS-3, and PAS-4.

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Commenter's Name	Organization	Comment Number	Response
Bowles, Hugh	Hahamongna Watch	HW-8	As a lead agency pursuant to CEQA, the City is responsible for evaluating environmental impacts. See response to comments PAS-3 and PAS-4 for additional information.
Bowles, Hugh	Hahamongna Watch	HW-9	The details of a restoration plan will be determined at the time the City undertakes detailed design and prepares the appropriate plans and specifications. See also response to comment PAS-4 for a discussion of scheduling and project-level CEQA review.
Bowles, Hugh	Hahamongna Watch	HW-10	Cumulative impacts are adequately and appropriately evaluated in the Initial Study. See the discussion of groundwater in subsection 3.9(b) of the Initial Study and the discussion of water supply in subsection 3.17(d) of the Initial Study. Suggestion regarding asphalt removal are noted. See response to comment PAS-4 for a discussion of project scheduling. Concerns regarding project financing and scheduling are noted. In "Question 1" the commenter references an interim condition. Implementation of asphalt removal and habitat restoration projects identified in the Hahamongna Watershed Park Master Plan would have a beneficial impact on habitat. The fact that not all such projects have been implemented to date does not create a cumulative impact.
Bowles, Hugh	Hahamongna Watch	HW-11	The Disc Golf course is outside of the Annex site and the comment not germane to the proposed Master Plan Addendum. Refer to the adopted Hahamongna Watershed Park Master Plan for information regarding the configuration of the Disc Golf Course. See also response to comment PAS-4 for additional information regarding project implementation.

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Commenter's Name	Organization	Comment Number	Response
Bowles, Hugh	Hahamongna Watch	HW-12	See the discussion of impacts related to the Station Fire beginning on pg. 3-19 of the Initial Study and the corresponding technical documents included in Initial Study Appendix E. See response to comment PAS-4 for a discussion of project scheduling and project-level CEQA review.
Bowles, Hugh	Hahamongna Watch	HW-13	Concluding remarks are made. Suggestions are noted.
Kruells, Marietta		MK-1	Introductory statements are made no response is necessary.
Kruells, Marietta		MK-2	Both the HWPMP and the Master Plan Addendum are at a master plan level of detail. The environmental document provided analyzed the Master Plan adequately for the detail provided. Comments and concerns are noted. See also response to comment FOH-b35. Comments regarding the Spirit of the Sage Council settlement are not germane to the proposed Master Plan Addendum. The significance of any historic trail lies within the overall continuous route, rather than an exact footprint in any particular place.
Kruells, Marietta		MK-3	Exhibit 3.2 depicts the bikeway as proposed in the Master Plan Addendum and in the approved HWPMP. Comment regarding West Rim Trail is not germane as it describes a condition that is not a part of the proposed Master Plan Addendum.
Kruells, Marietta		MK-4	Comments noted. The details of this trail will be determined at the time the City undertakes detailed design and prepares the appropriate plans and specifications.
Kruells, Marietta		MK-5	Comment noted. No action taken.
Kruells, Marietta		MK-6	Commenter refers to areas outside the Annex that are not germane to the proposed Master Plan Addendum.

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Commenter's Name	Organization	Comment Number	Response
Kruells, Marietta		MK-7	Impacts are adequately and appropriately evaluated in the Initial Study. The details of each of these project areas will be determined at the time the City undertakes detailed design and prepares the appropriate plans and specifications.
Kruells, Marietta		MK-8	Impacts are adequately and appropriately evaluated in the Initial Study. Comments regarding the Spirit of the Sage Council settlement are not germane to the proposed Master Plan Addendum
Kruells, Marietta		MK-9	Comment noted.
Kruells, Marietta		MK-10	The bikeway in the proposed HMP Addendum reflects the City Council approved conceptual plan and directive to route a bikeway through the Annex (April 30, 2007). The conceptual plan approved by the City Council was the result of a design process that actively engaged the public. The primary purpose of the bike trail is for recreational use, the routes effectiveness as a commuter route is secondary. JPL commuters arriving from the west have adequate pedestrian access along established routes.
Kruells, Marietta		MK-11	Comments noted. Comments regarding the Spirit of the Sage Council settlement are not germane to the proposed Master Plan Addendum.
Kruells, Marietta		MK-12	Comment noted.
Minteer, Amy	Friends of Hahamongna	FOH-a1	Introductory statements are made; no response is necessary.
Minteer, Amy	Friends of Hahamongna	FOH-a2	The commenter introduces comments that are further detailed in later portions of the Friends of Hahamongna comment letter. See response to comment FOH-b3 for the corresponding response.
Minteer, Amy	Friends of Hahamongna	FOH-a3	The commenter introduces comments that are further detailed in later portions of the Friends of Hahamongna comment letter. See response to comments FOH-b3, FOH-b33, and FOH-b38 for the corresponding responses.

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Commenter's Name	Organization	Comment Number	Response
Minteer, Amy	Friends of Hahamongna	FOH-a4	Chapter 4 of the Initial Study provides a focused analysis of the bikeway and trails considered during the ongoing Master Plan Addendum process, including various trail alternatives suggested by the Friends of Hahamongna. In contrast to the commenters' assertion, the Initial Study does not accept, reject, or recommend any considered bikeway or trail. Rather, the Initial Study exclusively analyzes environmental impacts.
Minteer, Amy	Friends of Hahamongna	FOH-a5	The offsite portions of the bikeway are not germane to the proposed Master Plan Addendum.
Minteer, Amy	Friends of Hahamongna	FOH-a6	<p>Commenter is incorrect in stating that the Planning Commission made a recommendation regarding trees on the Annex site. Of the 4 Planning Commission recommendations made on 9/9/09, none were associated with trees. (See 2/1/10 Council Agenda Report)</p> <p>For clarification, the following is the recommendation from the HWPAC regarding trees (See 2/1/10 Council Agenda Report):</p> <ul style="list-style-type: none"> - 7. <i>That every effort be made to minimize tree removal in the Annex area (including non-natives due to the loss of habitat in the Station Fire);</i> <p>The commenter incorrectly paraphrased what the HWPAC recommended. Also, the commenter makes an incorrect assumption that the City would remove trees before taking steps to plant trees and restore habitat.</p> <p>In regards to the potential impacts noted by the commenter, see response to comments FOH-b45 (visual quality); PAS-2, FOH-b57, and FOH-b58 (wildlife); and FOH-b40 (Station Fire).</p>
Minteer, Amy	Friends of Hahamongna	FOH-a7	The commenter alleges that the Initial Study and Annex Plan contain "factual errors, inaccuracies and inconsistencies". However, in this portion of the comment letter, the commenter does not identify any such errors, inaccuracies, or inconsistencies. As such, no direct response can be provided. Specific allegations are provided in latter portions of the Friends of Hahamongna comment letter. Corresponding responses are provided below.
Minteer, Amy	Friends of Hahamongna	FOH-a8	Concluding remarks are made; no response is required.

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	Friends of Hahamongna	FOH-b1	Introductory statements are made; no response is necessary
	Friends of Hahamongna	FOH-b2	The commenters express the opinion that the Initial Study "fails to provide adequate analysis of the significant adverse impacts several of the projects included in the Plan would have." In this portion of the comment letter, the commenters neither identify which projects would allegedly cause such impacts nor identify what analysis in the Initial Study is allegedly inadequate. Specific allegations are provided in latter paragraphs of the comment letter. Corresponding responses are provided below. The commenters' allegation that impacts of specific projects "should be analyzed now" is not correct pursuant to CEQA. Section 15146 of the State CEQA Guidelines states that the degree of specificity required in a CEQA document should "correspond to the degree of specificity involved in the underlying activity which is described". Section 15152(c) of the State CEQA Guidelines further recognizes that the identification of project-specific impacts may not be feasible at the program level and "can be deferred, in many instances, until such time as the lead agency prepares a future environmental document in connection with a project".
	Friends of Hahamongna	FOH-b3	As FOH has been told in public meetings and in one-on-one meetings with staff, the only approval being considered at this time is Adoption of an Amendment to the Hahamongna Watershed Park Master Plan. Accordingly, the CEQA analysis in the initial study reviews the Amendment at the plan level. As a result of FOH's in-depth involvement in the process, the City did review the proposed bikeway at a finer level of detail, despite the fact that no funding for the bikeway is reasonably foreseeable at this point. See response to comment PAS-4 for a description of the City's process for undertaking any subsequent projects or related approvals, such as a Conditional Use Permit. Approval of a CUP is not proposed as part of the project. Any CUP will be subject to review pursuant to CEQA at the time it is proposed.
	Friends of Hahamongna	FOH-b4	See pages 1-3, 1-4, and 5-1 of the Initial Study for a discussion of the appropriate CEQA documentation for the proposed Master Plan Addendum and the City's determination thereabout. See also response to comment FOH-b7 below.

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	Friends of Hahamongna	FOH-b5	The commenters introduce alleged inadequacies of the Initial Study and Annex Plan, which are detailed in later paragraphs of the comment letter. Corresponding responses are provided below.
	Friends of Hahamongna	FOH-b6	In this portion of the comment letter, the commenters do not identify how or why the Focused Analysis of the Bikeway and Trails is inaccurate or inadequate. Specific allegations are provided in latter paragraphs of the comment letter. Corresponding responses are provided below.
	Friends of Hahamongna	FOH-b7	The potential environmental impacts of tree removal, grading, paving, structure relocation, underground infrastructure removal and relocation, equestrian facility reconfiguration, and demolition and reconstruction of the equestrian clubhouse are in fact analyzed in the Initial Study. Section 15176(d) of the State CEQA Guidelines states the lead agency is not "precluded from relying on the Master EIR solely because that document did not specifically identify or list, by name, the subsequent project as ultimately proposed for approval." In and of itself, the presence and number of new projects is of no consequence.
	Friends of Hahamongna	FOH-b8	Comment noted.
	Friends of Hahamongna	FOH-b9	The intensity of uses proposed for the Annex site is defined on a quantitative basis in the proposed Master Plan Addendum and corresponding Initial Study. The commenters' examples do not show an intensification of use and rather address reconfiguration of existing uses and configuration of proposed uses.
	Friends of Hahamongna	FOH-b10	Comment noted. Since both Open Space and PD-16 zoning allow for the existing and proposed uses of the Annex site, rezoning of the Annex site is not germane to the proposed Master Plan Addendum.
	Friends of Hahamongna	FOH-b11	See response to comment PAS-4 for a discussion and overview of the project implementation process. Concerns and opinions are noted.

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	Friends of Hahamongna	FOH-b12	The use of the JPL bridge as a temporary bicycle crossing is not a part of the proposed Master Plan Addendum. The comment is noted and in response the reference to the JPL bridge has been deleted from the Initial Study.
	Friends of Hahamongna	FOH-b13	The procedure undertaken for the proposed Master Plan Addendum is in accordance with City policy. The proposed Master Plan Addendum reflects the recommendations of the City's Planning Commission, Design Commission, Transportation Advisory Committee, and Hahamongna Watershed Park Advisory Committee. Comments related to the availability are noted.
	Friends of Hahamongna	FOH-b14	Comment noted. See response to comment PAS-4 for a discussion of project implementation.
	Friends of Hahamongna	FOH-b15	All iterations of the Master Plan Addendum included removal of all non-native trees from the Annex site for habitat restoration. Any tree removals will be conducted in accordance with City policy.
	Friends of Hahamongna	FOH-b16	The word "ownership" in this case applies to the construction materials of the assets and not to the underlying land, which is owned by the City. The ownership of assets is not germane to the current master plan level considerations, but is rather a topic for discussion between the City and the tenants during lease negotiations.
	Friends of Hahamongna	FOH-b17	In contrast to the commenters' allegations, the Initial Study and Traffic Impact Study consider the potential expansion of Annex's horse boarding capacity. Impacts of this potential expansion are comprehensively evaluated throughout the Initial Study, including potential parking impacts and the potential impacts of the physical improvements necessary to accommodate the potential expansion (commensurate with the degree of specificity of such physical improvements that is known at this master plan level).
	Friends of Hahamongna	FOH-b18	Suggestion noted.

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	Friends of Hahamongna	FOH-b19	"Figure 1" provided by the commenters' reflects a preliminary study and does not reflect the proposed Master Plan Addendum. Proposed reconfigurations for drainage improvements are documented in the proposed Master Plan Addendum and corresponding Initial Study.
	Friends of Hahamongna	FOH-b20	Comment noted.
	Friends of Hahamongna	FOH-b21	The JPL east lot and the equestrian picnic area were purposely not included in the parking areas for the Annex because they were not within what was considered a reasonable walking distance from the primary Annex use areas. The distance considered "reasonable" were parking areas within 2,800 feet or 1/2 mile of the proposed Environmental Education Center (EEC) within the Annex. The northern portion of the JPL east lot is 4,100 feet from the EEC and the equestrian picnic area is 3,800 feet from the EEC. However, these lots could be specified for use under the current recommendation in the draft Master Plan Addendum for the Annex, where an Annex reservation applicant would need to demonstrate a parking plan to use these lots as off-site Annex parking.
	Friends of Hahamongna	FOH-b22	Comment noted. The commenters' do not specify the nature of the alleged potential impact on Annex planning, and as such no response is possible.
	Friends of Hahamongna	FOH-b23	Suggestion noted.
	Friends of Hahamongna	FOH-b24	Suggestion noted.
	Friends of Hahamongna	FOH-b25	Suggestion noted.
	Friends of Hahamongna	FOH-b26	Suggestion noted.
	Friends of Hahamongna	FOH-b27	Suggestion noted.
	Friends of Hahamongna	FOH-b28	Suggestion noted.

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	Friends of Hahamongna	FOH-b29	Suggestion noted.
	Friends of Hahamongna	FOH-b30	Suggestion noted.
	Friends of Hahamongna	FOH-b31	Suggestion noted.
	Friends of Hahamongna	FOH-b32	Suggestion noted.
	Friends of Hahamongna	FOH-b33	<p>The Arroyo Seco Master EIR did, in fact, include the Hahamongna Annex as part of the project site, and baseline investigations conducted for the MEIR did, in fact, evaluate the Annex site. Master EIR Figure 2.3.1-1, which depicts the area of the Hahamongna Watershed Park Master Plan, clearly includes the Annex site as part of the Hahamongna Watershed Park and further identifies a "Potential Interpretive Center" for this area. The Annex site was described as part of the baseline conditions in the Master EIR. However, no improvements were proposed for the Annex site. See also subsection 1.2 of the Initial Study for a discussion of the Relationship of the Initial Study for the HMP Addendum to the Arroyo Seco Master EIR. See response to comment FOH-b2 regarding the projects identified in the Arroyo Seco Master EIR.</p> <p>In determining the appropriate CEQA document for the proposed HMP Addendum, the City considered the procedures for the use of a Master EIR (CEQA §§ 21157.1 and CEQA Guidelines §§ 15177(c) and 15179(b)(1)) in addition to considering CEQA Guidelines §§ 15162-15164, which describe the procedures for considering a change to, and subsequent approval of a project. Pursuant to CEQA Guidelines § 15177(c), the City determined that the proposed HMP Addendum was found to be within the scope of the Master EIR; and pursuant to CEQA Guidelines § 15179(b)(1) the City found that no substantial changes have occurred with respect to the circumstances in which the Master EIR was certified and no new information of substantial importance has arisen since the Master EIR was certified. In making this determination the City also considered the changes to the environment caused by the Station Fire (see Initial Study pgs. 3-19 to 3-20).</p>

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Commenter's Name	Organization	Comment Number	Response
	Friends of Hahamongna	FOH-b34	<p>The potential environmental impacts of tree removal, grading, paving, structure relocation, underground infrastructure removal and relocation, equestrian facility reconfiguration, and demolition and reconstruction of the equestrian clubhouse were analyzed in the Initial Study and found to be either less than significant or less than significant after application of the mitigation measures included in the Master EIR.</p> <p>While the analysis of alternatives was not required in this case, the City has evaluated all of the trail alternatives presented to date. Those alternatives that met the established design criteria were evaluated in greater detail.</p>
	Friends of Hahamongna	FOH-b35	<p>See responses to comments FOH-b2, FOH-b7, and FOH-b33. In contrast to the commenters' assertion, the determination of whether a project is within the scope of a Master EIR is not dependent on the identification of that project in the Master EIR. Section 15176(d) of the State CEQA Guidelines states the lead agency is not "precluded from relying on the Master EIR solely because that document did not specifically identify or list, by name, the subsequent project as ultimately proposed for approval." In Section 15177(c), the State CEQA Guidelines further state, "Whether a subsequent project is within the scope of the Master EIR is a question of fact to be determined by the lead agency based upon a review of the initial study to determine whether there are additional significant effects or new additional mitigation measures or alternatives required for the subsequent project that are not already discussed in the Master EIR." The commenters' assertion that "The intended use of a MEIR is for the individual projects contained within an area for which a plan has been prepared; it is not intended for use for a new plan and for an area not within the boundaries of the plan analyzed in the MEIR" is not supported by any section of CEQA or the State CEQA Guidelines. Nonetheless, as stated previously in response to comment FOH-b33, the Annex site is within the boundary of the project area considered in the Arroyo Seco Master EIR. The City's CEQA determinations for the proposed HMP Addendum, as presented on pg. 5-1 of the Initial Study, are supported by the evaluation contained in the Initial Study.</p>

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Commenter's Name	Organization	Comment Number	Response
	Friends of Hahamongna	FOH-b36	<p>See responses to comments FOH-b2, FOH-b7, FOH-b33, FOH-b34, and FOH-b35.</p> <p>The commenters' assertion that the "Initial Study acknowledges that the projects at the Annex were not within the scope of the Master EIR" is not correct.</p>
	Friends of Hahamongna	FOH-b37	<p>The guidance provided in Section 15162 of the State CEQA Guidelines was utilized in this case to (1) determine if "any additional significant effect on the environment which was not previously examined in the Master EIR" would occur pursuant to Section 15177 of the State CEQA Guidelines; (2) to determine if "substantial changes have occurred with respect to the circumstances under which the EIR was certified", pursuant to Section 15179 of the State CEQA Guidelines; and (3) to determine if there is "new available information which was not known and could not have been known at the time the Master EIR was certified", pursuant to Section 15179 of the State CEQA Guidelines. Section 15162 prompts the lead agency to ask critical questions in making such determinations.</p> <p>Due to its value, the guidance provided in Section 15162 of the CEQA Guidelines (which applies Section 21166 of CEQA) has been applied by the California courts to more than determining the need for Subsequent EIRs and Negative Declarations. For example, the courts have applied this guidance in determining the need to recirculate Draft EIRs or proposed Negative Declarations.</p>

**City of Pasadena ~ Hahamongna Annex
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Commenter's Name	Organization	Comment Number	Response
	Friends of Hahamongna	FOH-b38	Due to the nature of program-level CEQA documents, such as Master EIRs, the specific locations of impacts cannot always be identified. The fact that the Master EIR did not specify an impact at a certain location does not preclude the use of the Master EIR. In regards to the comments regarding construction air quality, the Initial Study estimates the volume of air pollutants that are expected to occur on the worst day of construction on the Annex site. The Initial Study further identifies that construction on the Annex site would not represent the worst day of construction in the entire Hahamongna Watershed Park Master Plan Area, since construction activities outside of the Annex site are substantially more intense. Thus, the Initial Study concludes that "the worst-case construction air quality impacts identified in the Arroyo Seco Master EIR would remain essentially the same" (see pg. 3-10). The commenters allege that the Initial Study is inadequate in its analysis of short-term visual, traffic, and parking impacts. However, the commenters do not explain why the Initial Study is inadequate and thus no response can be provided. Nonetheless, it should be noted that the subject Initial Study is a program-level CEQA document and that individual improvement projects will be subject to project-level CEQA review when such projects are proposed.
	Friends of Hahamongna	FOH-b39	No new mitigation measures are included in the Initial Study. The programming and implementation procedures described by the commenter are part of the proposed Master Plan Addendum.
	Friends of Hahamongna	FOH-b40	See pages 3-19, 3-20 and Appendix E of the Initial Study for the lead agency's analysis of the change in conditions caused by the Station Fire.
	Friends of Hahamongna	FOH-b41	See pages 1-3, 1-4, and 5-1 of the Initial Study for a discussion of the appropriate CEQA documentation for the proposed Master Plan Addendum and the City's determination thereabout.

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Commenter's Name	Organization	Comment Number	Response
	Friends of Hahamongna	FOH-b42	The statement that "the existing uses on the subject property would either remain the same or would lessen in intensity, with the exception of the assembly uses proposed for the former U.S. Forest Service buildings" has been deleted from the first full paragraph on pg. 1-2 in the <i>Introduction</i> chapter of the Initial Study. However, this change has no bearing on the analysis contained in the Initial Study. Chapter 2 <i>Project Description</i> of the Initial Study details the recommended improvements and programs of the proposed Master Plan Addendum and the corresponding potential environmental impacts are analyzed in Chapter 3 <i>Environmental Checklist Form</i> . All of the examples of potentially intensified uses noted by the commenters are identified in Chapter 2 of the Initial Study and evaluated in Chapter 3.
	Friends of Hahamongna	FOH-b43	The commenters' allege that changes to other projects in the Hahamongna Watershed Park Master Plan invalidate the MEIR. However, the commenters' do not identify any environmental impacts (project-specific or cumulative) that have been caused by or intensified by such changes.
	Friends of Hahamongna	FOH-b44	Impacts of the Master Plan Addendum's recommended improvements and layout are comprehensively evaluated in the Initial Study at a level that is commensurate with the degree of specificity that is known at this master plan level. The analysis in the Initial Study is consistent with intentions of CEQA and the State CEQA Guidelines. Section 15146 of the State CEQA Guidelines states that the degree of specificity required in a CEQA document should "correspond to the degree of specificity involved in the underlying activity which is described". Section 15152(c) of the State CEQA Guidelines further recognizes that the identification of project-specific impacts may not be feasible at the program level and "can be deferred, in many instances, until such time as the lead agency prepares a future environmental document in connection with a project".

**City of Pasadena ~ Hahamongna Annex
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Commenter's Name	Organization	Comment Number	Response
	Friends of Hahamongna	FOH-b45	The commenters' concerns for the potential aesthetic considerations of tree removal are noted. As identified in the Initial Study, based on the City's estimates, there are approximately 800 trees on the Annex site and approximately 92% of those trees are native species. Thus, approximately 8% of the existing trees (approximately 70 trees) would be removed/replaced for habitat restoration. Recognizing the benefits that any mature tree provides, removal/replacement of non-native trees would occur in phases (i.e., as improvement projects are implemented) to maintain an appropriate tree canopy on the Annex site. Given the small percentage of trees identified for potential removal from the Annex site and the fact that tree removals would occur over time, the aesthetic impacts of tree removals recommended in the proposed Master Plan Addendum are less than significant.
	Friends of Hahamongna	FOH-b46	The recommendation of the proposed Master Plan Addendum is to remove non-native trees from the Annex site for habitat restoration purposes. This recommendation does not conflict with the Arroyo Seco Design Guidelines.
	Friends of Hahamongna	FOH-b47	See response to comment FOH-b46. The Initial Study and Master Plan Addendum are adequate in that they identify master plan level recommendations for vegetation and analyze the corresponding environmental impacts.
	Friends of Hahamongna	FOH-b48	See response to comment FOH-b44. The Initial Study analyzes environmental impacts at a level that is commensurate with the degree of specificity that is known at this time. For most of the improvements identified in the proposed Master Plan Addendum, the environmental analysis is at the program level. However, the Initial Study provides a project-level environmental analysis of the bikeway alignment along the northern edge of the equestrian area since a more detailed design study of this potential improvement has been conducted.
	Friends of Hahamongna	FOH-b49	In contrast to the commenters' assertion, the proposed Master Plan Addendum calls for the restoration of "the native plant species (both trees and shrubs) along the edges of the bikeway alignment". See also response to comments PAS-3 and PAS-4 for a discussion regarding project implementation.

**City of Pasadena ~ Hahamongna Annex
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Commenter's Name	Organization	Comment Number	Response
	Friends of Hahamongna	FOH-b50	The commenters observations, while not verified, are noted. At the current master plan level of detail no modifications to the vegetation on the subject slope are anticipated. However, should project level design of improvements in this area identify the need to modify this vegetation, the noted observations would be taken into consideration during project-level CEQA review. See response to comments PAS-4 for a discussion of the project implementation process and the requirement for corresponding CEQA review. In regards to bird species, see response to comment PAS-2 for a description of the requirements of the Migratory Bird Treaty Act and the CA Fish & Game Code.
	Friends of Hahamongna	FOH-b51	The definition of 'native plants' in the Arroyo Seco Public Lands Ordinance refers to specific natural preservation areas defined in the Ordinance, which does not include the Annex. Native plants are those known to be indigenous to a specific geographic area, regardless of water needs. The commenter's statement that any tree that doesn't need supplemental water should be considered native is not correct. Most mature trees do not require supplemental water, as their root systems seek their own sources of water. The city does not provide supplemental water to mature city trees. The trees in Figure #3 the commenter refers to are not a "similar landscaped area of the Arroyo" as the photo is of trees within Brookside Golf course, which are regularly watered and maintained and operated as a golf course.
	Friends of Hahamongna	FOH-b52	Peruvian Pepper (<i>Schinus molle</i>) appears on numerous recognized statewide and local lists of invasive species, including the lists maintained by the California Invasive Plant Council, and the Los Angeles and San Gabriel Rivers Watershed Council.
	Friends of Hahamongna	FOH-b53	Establishing of native trees will involve supplemental watering on a temporary basis until such trees are established. Once trees are established, supplemental watering would cease. The potential water supply considerations of the proposed Master Plan Addendum are analyzed on pgs. 3-65 to 3-68 and were found to be less than significant. Pg. 3-68 specifically discusses the City of Pasadena's water conservation efforts.

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Commenter's Name	Organization	Comment Number	Response
	Friends of Hahamongna	FOH-b54	See response to comments PAS-2, PAS-3, and PAS-4.
	Friends of Hahamongna	FOH-b55	Comments are noted. See pgs. 3-19 to 3-20 and Appendix E of the Initial Study for a discussion of Station Fire-related considerations.
	Friends of Hahamongna	FOH-b56	Comments are noted. The impacts of the Station Fire on wildlife are not impacts of the proposed Master Plan Addendum.
	Friends of Hahamongna	FOH-b57	Observations have not been verified, and the specific location and date of such observations has not been provided. Nevertheless, observations are noted and would be considered during project-level CEQA review. See response to comments PAS-4 for a discussion of the project implementation process and the requirement for corresponding CEQA review.
	Friends of Hahamongna	FOH-b58	Observations have not been verified, and the location and date of such observations has not been provided. Nevertheless, observations are noted and would be considered during project-level CEQA review. See response to comments PAS-4 for a discussion of the project implementation process and the requirement for corresponding CEQA review. In regards to bird species, see response to comment PAS-2 for a description of the requirements of the Migratory Bird Treaty Act and the CA Fish & Game Code.
	Friends of Hahamongna	FOH-b59	The commenters' opinion is noted.
	Friends of Hahamongna	FOH-b60	The Localized Significance Threshold methodology utilized in the Initial Study follows the methodology outlined by, and recommended by, the South Coast Air Quality Management District (AQMD) (<i>Final Localized Significance Threshold Methodology</i> , AQMD, Revised July 2008). Cumulative impacts are inherent in this methodology and the corresponding significance thresholds - i.e., the thresholds are set in a manner that considers the cumulative scenario but allows projects to be evaluated on an individual basis. The commenters' suggestion that PM10 emissions from other activities in the Hahamongna Watershed Park should be added to the identified construction pollutant levels is in conflict with the AQMD's LST methodology. Furthermore, the commenters' assertion that "cumulative impact of simultaneous construction...would exceed the threshold of significance" is not supported by any evidence or fact.

**City of Pasadena ~ Hahamongna Annex
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Commenter's Name	Organization	Comment Number	Response
	Friends of Hahamongna	FOH-b61	<p>The potential removal of 70 trees on the Annex site as identified in the proposed Master Plan Addendum would not be a considerable contribution - or even a measurable contribution - to global climate change. The amount of carbon dioxide absorbed and/or sequestered by 70 trees represents a nearly infinitely small percentage of the carbon dioxide absorbed/sequestered by trees around the globe and an even smaller percentage of the carbon dioxide in the atmosphere. In regards to absorption, the carbon dioxide absorption rate of trees varies by species, size, and age of the individual. However, in many cases younger plants absorb more carbon dioxide than mature specimens. As such, replacement trees and other vegetation planted on the Annex site may actually increase the amount of carbon dioxide absorption occurring on the Annex site. In regards to sequestration, the carbon stored in trees removed from the site would only re-enter the atmosphere as a greenhouse gas if the trees were burned.</p>
	Friends of Hahamongna	FOH-b62	<p>Administrative record shows a discussion of a bikeway and separate, parallel trail. The proposed addendum has never, in any iteration, proposed a shared bike/pedestrian/equestrian path.</p> <p>Commenter's assertion that access is for "bikes only" fails to mention that the master plan addendum recommends a trail route that provides access to the Annex from other portions of HWP and preserves the existing through-routes.</p> <p>ADA-compliant access to the bikeway will be provided as a matter of law.</p> <p>JPL connector trail: Project-level design will happen in the future.</p>
	Friends of Hahamongna	FOH-b63	<p>Annex Plan Exhibit 3.2 makes no mention of restoration areas in the location of the existing jumping arena. Master Plan addendum page 3-10 lists a jumping arena as an anticipated amenity for the horse-boarding area. Commenters' assertion that recreation uses are lost is inaccurate. The jumping arena area described by the commenter describes only the existing condition and does not necessarily address the master plan addendum proposal. The amenities shown in exhibits and described in text within the Master Plan are at a master plan level of design detail. See response to comment PAS-4 for a discussion of project scheduling and project-level CEQA review for future projects.</p>

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Commenter's Name	Organization	Comment Number	Response
	Friends of Hahamongna	FOH-b64	Master Plan addendum does not recommend the removal of a jumping arena and includes it as an "anticipated amenity". The Master Plan does not, however, specify that this arena will be the existing one, nor that it will occupy that same footprint. Precise design for the lease areas will be prepared by the City working directly with the tenants.
	Friends of Hahamongna	FOH-b65	Precise design for the lease areas will be prepared by the City working directly with the tenants.
	Friends of Hahamongna	FOH-b66	Master Plan acknowledges that park hours may need to be adjusted to allow for emergency and humane horse care. Remainder of comment discusses speculative conditions that are not a part of the proposed addendum. Synonymous with habitat restoration is the elimination of lighting regardless of existing conditions and the reason for establishing the hours of operation in Hahamongna and the Lower Arroyo, the areas of the Arroyo most associated with preservation. Some of the existing light usage in the Annex does not meet City lighting standards for public recreational use and therefore do not represent a condition that would continue; these will be outlined during the recommended CUP phase of the project.
	Friends of Hahamongna	FOH-b67	Concerns are noted. To clarify, the proposed Master Plan Addendum calls for the restoration of "the native plant species (both trees and shrubs) along the edges of the bikeway alignment". The specific details of habitat restoration and landscaping have not been developed to date. See responses to comments PAS-3 and PAS-4 for a discussion regarding project implementation. Nonetheless, the proposed Master Plan Addendum would have a beneficial impact on recreation. Of note, the proposed Master Plan Addendum calls for the development of additional trails.

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Commenter's Name	Organization	Comment Number	Response
	Friends of Hahamongna	FOH-b68	The Initial Study analyzes recreational impacts at a level that is commensurate with the degree of specificity that is known at this time. See response to comment FOH-b2 for a discussion of the appropriate degree of specificity in the Initial Study. See responses to comments PAS-3 and PAS-4 for a discussion regarding project implementation and corresponding project-level CEQA review.
	Friends of Hahamongna	FOH-b69	The presence of bicycles in the vicinity of other recreational uses is not a significant impact pursuant to CEQA, neither from a safety standpoint nor from a public services standpoint. For the level of detail known at this time, the meandering character of the proposed bikeway is not conducive to high-speed travel. The bikeway will be designed in accordance with accepted design principals and standards. Private motorized vehicles will not be allowed on the bikeway in the proposed Master Plan Addendum. Adequate steps will be taken at the precise design level to restrict motorized vehicles. Also, the comments made are enforcement issues, which like with any activity in the park, will require continual monitoring and that will be the responsibility of the City Parks Division and other related City department.
	Friends of Hahamongna	FOH-b70	Circulation routes within the footprint of the public equestrian area are a part of precise design for the future; safety within, entering and exiting the horse boarding area is of utmost concern to the City. Remainder of comment is speculative and does not reflect the proposed addendum. The elimination of gates reflects the intent to eliminate barriers to public access, such as locked gates. The location of entry gates or gates that secure the equestrian activities from the general public access to the public equestrian area, is part of the precise design for the future.
	Friends of Hahamongna	FOH-b-71	The only approval being considered at this time is Adoption of an Amendment to the Hahamongna Watershed Park Master Plan. See response to comment PAS-4 for a description of the City's process for undertaking any subsequent projects or related approvals, such as a Master Conditional Use Permit.

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Commenter's Name	Organization	Comment Number	Response
	Friends of Hahamongna	FOH-b72	<p>There has been a level of uncertainty regarding the issue of an equestrian/pedestrian trail adjacent to the proposed bikeway along the northern boundary of the equestrian area. Thus, to err on the side of caution, and to ensure the worst-case scenario was evaluated, the trail was identified as a "potential" improvement in the Initial Study. The fact that the subject trail is not a part of the currently proposed Master Plan Addendum does not affect the adequacy of the CEQA document. In regards to Chapter 4.0 of the Initial Study, this Chapter evaluates various bikeway and trail alternative alignments that had been considered during the Master Plan process, several of which are not included in the proposed Master Plan Addendum. The commenters' suggestion that the analysis of the subject trail should not be included in this Chapter is in conflict with CEQA's intent of providing decision makers with the information needed to make an informed decision.</p> <p>The recommendation referred to in the Mobility section, refers to the trail route from the transit stop at the park entrance, into the Annex and the other connecting equestrian/hiking trails leading to the Annex from this trail route originating at the park entrance.</p>
	Friends of Hahamongna	FOH-b73	<p>Different iterations of the plan reflect continuous input from the public and various commissions and committees, as well as a direct dialog with FOH and other interested parties. Staff made available "redline" versions of each revised iteration of the Master Plan and IS as requested by each Commission. Recommendations were received and revisions made while various Commission and committee presentations were underway. Revisions were described at each presentation in the cases where recommendations were not able to be incorporated before a presentation. Commissions and committees were not presented with a plan that described a shared bike/equestrian/pedestrian path. The proposed Master Plan Addendum reflects the recommendations of the City's Planning Commission, Design Commission, Transportation Advisory Committee, and Hahamongna Watershed Park Advisory Committee.</p>

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Commenter's Name	Organization	Comment Number	Response
	Friends of Hahamongna	FOH-b74	<p>The commenters assertion that revised language represents an "opposite position" is inaccurate. The revisions described by the commenter reflect a clarification that non-native tree removals is a goal for the entire Annex and not limited to any specific area. All iterations of the Master Plan Addendum included removal of all non-native trees from the Annex site for habitat restoration. Any tree removals will be conducted in accordance with City policy.</p> <p>Comments are noted. The impacts of the Station Fire on wildlife are not impacts of the proposed Master Plan Addendum.</p>
	Friends of Hahamongna	FOH-b75	<p>See Errata Sheet regarding the "temporary use of the JPL bridge".</p> <p>To clarify the continuation of an approved bikeway within the Annex, would connect to the approved bikeway route in the adopted HWP Master Plan that runs along the western most edge of Hahamongna (currently a dirt trail) and outside of the area indicated as preservation area in the Spirit of the Sage Settlement Agreement. It is the City's position that the bicycle route of the adopted HWP master plan is permissible under the agreement with the Sage Council. This portion of the bikeway (along the JPL fence) as well as the northerly bridge crossing are not currently funded nor has any detailed design for these sections of the bikeway been completed. Like the Flint Wash Bridge crossing, staff continues to seek funding and opportunities to fulfill the vision for this recreational component of the HWP Master Plan.</p>
	Friends of Hahamongna	FOH-b76	<p>Bikeway has always been described as "bikes only".</p> <p>The re-routing of the proposed trail as a recommendation by the commission and committees does not constitute a significant change.</p>
	Friends of Hahamongna	FOH-b77	<p>Comment noted. Describes an area outside the Annex and is not Germaine to the Master Plan Addendum</p>

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Commenter's Name	Organization	Comment Number	Response
	Friends of Hahamongna	FOH-b78	Commenter describes areas outside the Annex which are not germane to the Master Plan Addendum. Comments regarding the Spirit of the Sage Council settlement are not germane to the proposed Master Plan Addendum; also see FOH-b-75See IS Errata sheet regarding temporary use of JPL Bridge. Comments noted regarding 'shared use'. The current recommendation based on various commission recommendations is not for shared use.
	Friends of Hahamongna	FOH-b79	Discussions regarding cost are not Germane to the Master Plan Addendum. Proposed addendum reflects a master plan level of detail and specifics of construction are not known. See response PAS-4 for discussion regarding specific project design.
	Friends of Hahamongna	FOH-b80	"Figure 1" provided by the commenters' reflects a preliminary study and does not reflect the proposed Master Plan Addendum. Proposed reconfigurations for drainage improvements are documented in the proposed Master Plan Addendum and corresponding Initial Study. The Initial Study evaluates the impacts of grading, infrastructure, and equestrian facility improvements at a level that is commensurate with the degree of specificity that is known at this time. See response to comment FOH-b2 for a discussion of the appropriate degree of specificity in the Initial Study. See responses to comments PAS-3 and PAS-4 for a discussion regarding project implementation and corresponding project-level CEQA review.
	Friends of Hahamongna	FOH-b81	Comment noted. Since both Open Space and PD-16 zoning allow for the existing and proposed uses of the Annex site, rezoning of the Annex site is not germane to the proposed Master Plan Addendum.
	Friends of Hahamongna	FOH-b82	See response to comment FOH-b21. To reiterate, the distance considered "reasonable" were parking areas within 2,800 feet or 1/2 mile of the proposed <u>Environmental Education Center (EEC)</u> (not the corner of the Annex site).

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Commenter's Name	Organization	Comment Number	Response
	Friends of Hahamongna	FOH-b83	Comment noted; see Errata Sheet.
	Friends of Hahamongna	FOH-b84	Exhibits 3-2, 3-3, 3-4, and those contained in the approved HWPMP reflect a master plan level of detail. See response PAS4 for discussion regarding specific project design.
	Friends of Hahamongna	FOH-b85	Comment noted; see Errata Sheet.
	Friends of Hahamongna	FOH-b86	See pgs. 3-20 and 3-21 of the Initial Study for a summary of tree removal recommendations/components in the proposed Master Plan Addendum. Table 4.2 of the Initial Study identifies all of the trees in the vicinity of the proposed bikeway that the proposed Master Plan Addendum recommends for removal, which includes both removals for bikeway installation and removal of non-natives for habitat restoration.
	Friends of Hahamongna	FOH-b87	The Initial Study identifies potential tree removals at a level that is commensurate with the degree of specificity that is known at this time. See response to comment FOH-b2 for a discussion of the appropriate degree of specificity in the Initial Study. See responses to comments PAS-3 and PAS-4 for a discussion regarding project implementation and corresponding project-level CEQA review.
	Friends of Hahamongna	FOH-b88	See response to comment FOH-b12.
	Friends of Hahamongna	FOH-b89	Commenter is incorrect. The Master Plan Addendum does include Appendices in the Table of Contents. The Table of Contents makes no mention of text referred to by commenter under 3.2 <i>Land Uses and Anticipated Facilities</i>
	Friends of Hahamongna	FOH-b90	Commenter is referred to the appropriate Master Plan Addendum dated 11/20/09 as posted on the city's website.
	Friends of Hahamongna		Comment noted. See Errata Sheet for Addendum regarding revised width.
	Friends of Hahamongna		Comment noted. See Errata Sheet for Addendum regarding number of trees.

City of Pasadena ~ Hahamongna Annex Comments and Responses

Commenter's Name	Organization	Comment Number	Response
	Friends of Hahamongna	FOH-b91	<p>Comment noted. See Addendum Errata Sheet for corrections.</p> <p>Exhibit 3-2 will be corrected; note the exhibit is diagrammatic, but will be corrected to more closely portray the historic Altadena Crest Trail crossing. It should also be noted that once the North Bridge crossing project of the Perimeter Trail is implemented, the cross basin Altadena Crest Trail shown could be abandoned, as the commenter indicates.</p>
	Friends of Hahamongna	FOH-b92	<p>The JPL east lot and the equestrian picnic area were purposely not included in the parking areas for the Annex because they were not within what was considered a reasonable walking distance from the primary Annex use areas. The distance considered "reasonable" were parking areas within 2,800 feet or 1/2 mile of the proposed Environmental Education Center (EEC) within the Annex. The northern portion of the JPL east lot is 4,100 feet from the EEC and the equestrian picnic area is 3,800 feet from the EEC. However, these lots could be specified for use under the current recommendation in the draft Master Plan Addendum for the Annex, where an Annex reservation applicant would need to demonstrate a parking plan to use these lots as off-site Annex parking.</p> <p>The walking distances from the entrance to the Environmental Education Center (EEC) to the two subject parking locations have been checked and confirmed as stated in the Draft Initial Study, page 3-62, from the Equestrian Picnic Area at the southern end of the Upper Oak Grove Area to the EEC along a pedestrian safe route, and from the northern one quarter portion of the JPL East Lot across the yet to be constructed Northern Bridge Crossing to the EEC along a pedestrian safe route.</p>
	Friends of Hahamongna	FOH-b93	<p>Comment Noted and document revised. See Errata Sheet.</p>
	Friends of Hahamongna	FOH-b94	<p>Comment noted. Revisions will be made.</p>
	Friends of Hahamongna	FOH-b95	<p>Comment noted. Revisions will be made.</p>

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Commenter's Name	Organization	Comment Number	Response
	Friends of Hahamongna	FOH-b96	Comment noted. Revisions will be made. "Completeness" of vehicular route will be established when precise plans are prepared for the public equestrian area. Exhibit 3-5 provides a master-plan level of detail. Precise design for the lease areas will be prepared by the City working directly with the tenants. See response PAS-4 for discussions regarding specific project design.
	Friends of Hahamongna	FOH-b97	See response to comment RBR-13.
	Friends of Hahamongna	FOH-b98	See response to comment FOH-b94.
	Friends of Hahamongna	FOH-b99	Comment noted. The referenced sentence on pg. 4-1 of the Initial Study has been revised to read, "In addition, during a meeting between City staff, the City Manager, Friends of the Hahamongna, and members of the public, the Linda Vista Annandale Association on June 4, 2009..."
	Friends of Hahamongna	FOH-b100	The "existing natural surface trail" referred to on pg. 4-1 of the Initial Study is the alignment adjacent to the "site's main access road from the southwest corner of the site to the road's terminus at the entrance to the equestrian facility". The Initial Study correctly notes that this trail would be maintained under the proposed Master Plan Addendum.
	Friends of Hahamongna	FOH-b101	The commenters misinterpret the phrase "on the east side of the JPL campus" to mean within the JPL campus. The phrase is referring to the area east of, and outside of, the JPL campus.
	Friends of Hahamongna	FOH-b102	The basis for the study is the proposed Addendum builds on the existing Master Plan. For equivalent comparison purposes, the criteria applied to the suggested alternative bikeway alignment was the same as that utilized for the bikeway in the proposed Master Plan Addendum. Conservative estimates are utilized to ensure impacts consider the worst-case scenario and satisfy CEQA requirements.

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Commenter's Name	Organization	Comment Number	Response
	Friends of Hahamongna	FOH-b103	Thank you for comment but staff disagrees that page cited is should incorporate the descriptions the commenter suggests. Comments made are already included later in the document.
	Friends of Hahamongna	FOH-b104	Comment noted.
	Friends of Hahamongna	FOH-b105	Comment noted. No action taken.
	Friends of Hahamongna	FOH-b106	Comment noted. No action taken.
	Friends of Hahamongna	FOH-b107	Exhibits in the Master Plan provide a master-plan level of detail. Precise design for the lease areas will be prepared by the City working directly with the tenants. See response PAS-4 for discussions regarding specific project design.
	Friends of Hahamongna	FOH-b108	Comment noted. No action taken.
	Friends of Hahamongna	FOH-b109	Comment noted. No action taken.
	Friends of Hahamongna	FOH-b110	Comment noted. Corrections will be made. See Errata sheet for Addendum.
	Friends of Hahamongna	FOH-b111	The key language in this statement is the phrase "may be". Since improvements identified in the proposed Master Plan Addendum have been designed at the master plan level and not the project level, this potential modification/repair/relocation was included in the Initial Study to ensure the worst-case scenario was evaluated.
	Friends of Hahamongna	FOH-b112	The commenters' suggestion to add detail regarding the boundaries of the three equestrian sub areas is noted. However, this level of detail is not necessary to adequately evaluate the environmental impacts at this master plan level.

**City of Pasadena ~ Hahamongna Annex
Comments and Responses**

Commenter's Name	Organization	Comment Number	Response
	Friends of Hahamongna	FOH-b113	Pg. 2-23 states, "To protect the habitat value of this area while allowing human use, formal access routes and a permeable parking surface would be provided to limit destruction of vegetation. Likewise, to limit the impact footprint, the proposed Master Plan Amendment calls for management and restriction of equestrian activity in the oak woodland area, which has historically degraded this area." The intention is to restore habitat while allowing for certain human uses including trails.
	Friends of Hahamongna	FOH-b114	See Initial Study Exhibits 2.5 <i>Proposed HMP Addendum Plan</i> , 2.7 <i>Proposed Mobility Plan</i> , and 2.8 <i>Proposed Parking Plan</i> for graphic depictions of the vehicle circulation included in the proposed Master Plan Addendum. The proposed circulation routes are defined to a sufficient degree to analyze circulation impacts at the master plan level.
	Friends of Hahamongna	FOH-b115	The use of the terms "low intensity" and "medium level intensity" is an issue of semantics that is taken out of context by the commenters. The Carrying Capacity Analysis, which is included in the project's public record, considered three degrees of usage for the site. For discussion purposes, these three degrees of usage were termed "low", "medium", and "high". In this case, it could be argued that even the "high" degree of usage considered in the Carrying Capacity Analysis could be considered low intensity based on public park standards.
	Friends of Hahamongna	FOH-b116	Comments are noted. Chapter 4 of the Initial Study provides a focused analysis of the bikeway and trails considered during the ongoing Master Plan Addendum process, including various trail alternatives suggested by the Friends of Hahamongna. The commenters fail to recognize that the Initial Study, including Chapter 4, was made available for public review in accordance with CEQA. Thus providing opportunity for the public to consider the alternative trail alignments and to provide comment either through written correspondence or at forthcoming public hearings.

City of Pasadena ~ Hahamongna Annex Comments and Responses

Commenter's Name	Organization	Comment Number	Response
	Friends of Hahamongna	FOH-b117	The commenters refer to a preliminary circulation study that included multiple access options. The specific access option referred to by the commenters was eliminated for consideration prior to preparation of the CEQA document and was never deemed "environmentally acceptable". It is also important to note that the Initial Study does not accept or reject any considered bikeway or trail, but rather exclusively analyzes environmental impacts.
	Friends of Hahamongna	FOH-b118	Again, the Initial Study does not accept or reject any considered bikeway or trail, but rather exclusively analyzes environmental impacts. The examples identified by the commenters do not identify any inadequate analysis but rather attempt to compare the design criteria utilized for the Annex site with off-site facilities. The commenters allege that the analysis "fails to accurately state impacts from the recommended alternative"; however, the commenters do not specify what is inaccurate about the analysis contained in the Initial Study. As such, no response is possible.
	Friends of Hahamongna	FOH-b119	Comment noted.
	Friends of Hahamongna	FOH-b120	Separation of cyclists from other uses, as used in the IS, refers to cyclists using a separate physical path from pedestrian/equestrians only. The edge condition described by the commenter would still fall within this definition of separation since cyclists are traveling on a different physical path from trail users. Other comments noted; no action required.
	Friends of Hahamongna	FOH-b121	<p>The commenter fails to recognize that the surface of the Perimeter Trail alignment is a natural surface and not a bicycle surface.</p> <p>The claim that the Perimeter Trail Bikeway would be environmentally superior is not supported by any analysis offered by the commenters. Chapter 4 of the Initial Study provides a comparison of the environmental impacts of the bikeways and trails considered during the Master Plan Addendum process.</p> <p>All other comments noted.</p>

**City of Pasadena ~ Hahamongna Annex
Comments and Responses**

Commenter's Name	Organization	Comment Number	Response
	Friends of Hahamongna	FOH-b122	This is an accurate statement, however it must be noted that FOH describes a design solution that would require reconfiguration of the existing horse boarding facility. Such reconfiguration is possible, but would be determined in the future as a part of precise design for the horse boarding area, to be undertaken jointly by the City and the boarding facility tenant.
	Friends of Hahamongna	FOH-b123	Comment noted. The proposed bikeway alignment is within a disturbed area. The vegetation in the vicinity of this alignment is not of the same value as the native plant communities to the east (i.e., closer to the Arroyo watercourse). For clarification purposes, while the suggested Perimeter Trail Bikeway alignment would largely utilize the footprint of the Old Quarry Road, native habitat exists along the portions of this alignment.
	Friends of Hahamongna	FOH-b124	See response to comment FOH-b102. The commenters fail to recognize that the surface of the Perimeter Trail alignment is a natural surface and not a bicycle surface. The claim that the Perimeter Trail Bikeway would be environmentally superior is not supported by any analysis offered by the commenters. Chapter 4 of the Initial Study provides a comparison of the environmental impacts of the bikeways and trails considered during the Master Plan Addendum process.
	Friends of Hahamongna	FOH-b125	Comment noted. The bikeway included in the proposed Master Plan Addendum involves realigning/replacing 775 linear feet of existing fence line. Sub-Trail Option 2 requires 550 linear feet of new fencing. In both cases, the aesthetic impacts of fence improvements are considered less than significant.
	Friends of Hahamongna	FOH-b126	In addition to the slope noted by the commenters, Sub-Trail Option 2 crosses through the portion of the site identified for sycamore woodland restoration. As noted in the Initial Study, the total length of Sub-Trail Option 2 across habitat restoration areas is approximately 200 linear feet. No portion of this 200 linear feet is shared with any other trail.
	Friends of Hahamongna	FOH-b127	Concluding remarks are made. Suggestions and opinions are noted.

**City of Pasadena ~ Hahamongna Annex
Comments and Responses**

Commenter's Name	Organization	Comment Number	Response
Morgan, Scott	State Clearinghouse	SCH-1	Comments noted.
Singleton, Dave	Native American Heritage Commission	NAHC-1	The Native American Heritage Commission (NAHC or Commission) comment letter provides general procedures for analyzing and mitigating potential impacts on Native American resources. The cultural resources investigation and coordination with Native American tribes that was undertaken for the Arroyo Seco Master EIR was conducted in accordance with the procedures recommended by the NAHC. In addition, Master EIR Mitigation Measures CULT-2 through CULT-5, which are incorporated into the proposed Master Plan Addendum, are consistent with the mitigation requirements noted by the NAHC.

Jomsky, Mark

From: Leeona Klippstein [leeona@earthlink.net]
Sent: Sunday, January 31, 2010 7:00 PM
To: Tornek, Terry; Bogaard, Bill; Gordo, Victor; Madison, Steve; Haderlein, Steve; Robinson, Jonathan (ITSD); McAustin, Margaret; McIntyre, Jacqueline; Holden, Chris
Cc: Fuentes, Theresa; Laveaga, Rosa; Jomsky, Mark; Craig Sherman; gaboona@sbcglobal.net; Mary E Barrie; Hugh Bowles; Beck, Michael; Marietta
Subject: Public Comments on Agenda #6 for 2/1/10 - City Council Hearing (1)
Attachments: 1.26.10 Attach to Comments on HahaAnnex.docx; A Critique of Mountain Bikes.docx; Assessing the Impacts of Humn Activities on Wildlife.pdf



1.26.10 Attach A Critique of Assessing the
Comments on Mountain Bikes...mpacts of Humn

Please find a comment letter from Spirit of the Sage Council for Agenda Item #6, for submission to the City Council - Public Comment on 2/1/10 , or thereafter. The comment letter is attached and included are 15 attachments that will follow in groups of 3 in 5 emails.

If you are unable to retrieve the attachments, please contact me to resend.

Thank you

Leeona Klippstein, Executive Director
Spirit of the Sage Council
(626) 676-4116

Spirit of the Sage Council
Defending & Protecting Native Plants, Wildlife and Sacred Lands

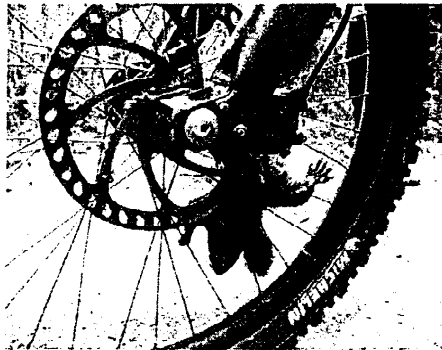
City of Pasadena
Mayor & Council Members

Via E-mail : "ttornek@cityofpasadena.net" <ttornek@cityofpasadena.net>, "Mayor Bob Bogaard" <bbogaard@cityofpasadena.net>, "City Council Member Gordo" <vgordo@cityofpasadena.net>, "Council Member Steve Madison" <smadison@cityofpasadena.net>, "Council Member Steve Shaderlein" <shaderlein@cityofpasadena.net>, "Jrobinson@cityofpasadena.net" <jrobinson@cityofpasadena.net>, "mmcaustin@cityofpasadena.net" <mmcaustin@cityofpasadena.net>, "Chris Holden's office" <jmcintyre@cityofpasadena.net>, "cholden@cityofpasadena.net" <cholden@cityofpasadena.net>,"

February 1, 2010

RE: Public Comment on Agenda Item # 6 - proposed adoption of Hahamongna and Annex Projects, ASMP Addendum, and Initial Study etc. ("Project") – before City Council for February 1, 2010.

On behalf of Spirit of the Sage Council (Sage Council), I am submitting the following published scientific papers, studies, FWS communication and photo as supplemental information to the January 25th comment letter submitted by the Law Office of Craig Sherman, on behalf of the Sage Council. These scientific publications are relevant to the proposed Hahamongna/Annex project and others regarding the effects of roads, trails, mountain bikes and recreational activities on habitat and species of the Arroyo Seco ecosystem. I'm also including a photo (squirrel in bike wheel) as a visual example of how mountain bikes kill wildlife – moving too fast to stop for small mammals, reptiles, rodents and even hikers—leading to injuries and even death.



The Sage Council has a long history of defending the Arroyo Seco and Hahamongna, the indigenous lands of the Shoshoni – Gabrielino (aka by the State as the “Gabrielino Band of California Mission Indians”). We opposed the City calling the area a “park” and turning over management to Parks and Recreation for numerous reasons, primarily because there are “Sacred Lands” of cultural significance – as recorded by the State “Native American Heritage Commission.” In addition, there is an existing “conservation easement,” migratory species, endangered species and natural communities that have a high priority for conservation. Therefore, the Hahamongna area must not be used for “recreational” activities and human uses that are known not to promote and provide for conservation of natural resources, including wildlife.

Scandia Bldg., 30 North Raymond Ave., Suite 303, Pasadena, CA 91103
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Telephone - (626) 676-4116 and (910) 947-5091
www.sagecouncil.info and www.sagecouncil.com

Spirit of the Sage Council comments 2-1-2010
Agenda Item #6

...“There are several studies which have directly examined the effects of pets (primarily dogs) in wildland areas, both on and off leash, and have found that a person walking a dog disturbs wildlife significantly more than a person walking without a dog. This has been measured in terms of the distance from the path that animals are flushed and the amount of time it takes for wildlife to return to the vicinity of the path after the person/person-dog combination have passed. So strictly from an indirect disturbance to wildlife (this includes flushing birds from nests nearby trails and making them more vulnerable to predation and abandonment). There is also, of course, the direct interaction between dogs and wildlife as the dogs act as predators. Even on a leash dogs can catch and kill wildlife that does not flush – eg., juvenile rabbits that freeze in hopes of not being seen. I have witnessed this myself several times and it is not uncommon as one might think. Lastly, the dogs do serve as reservoirs and/or vectors for viruses and illnesses (e.g., canine hepatitis, parvovirus, distemper, mange, etc.), that can be transmitted to coyotes and other mammalian species. For example, bringing dogs into the Preserve allows for transmission of airborne pathogens such as parvovirus to be transmitted to wild coyote populations. While we often think more about how coyotes might “infect” our pets with viruses or diseases, it is a “two way street.”

Horses introduce other issues on conservation lands and again there are many examples of national and local reserves where equestrian use is restricted. There are several concerns associated with equestrian use ranging from disturbance of wildlife, to the introduction of non-native flora through feces and direct transport on hoofs, to increased soil erosion. The issue of disturbance to wildlife is similar to that of dogs. Horses can carry and spread a significant amount of seeds in their feces thus introducing and/or promoting the growth of non-native plants along trails and into protected areas. Some seeds are also carried directly on the animal either stuck to the hoof or within the animal’s hair. Controlling the introduction of non-natives is already costly, but could be prohibitive so if the introduction of seeds is increased through the allowance of horses. Horse feces are also known to provide seeds that attract cowbirds, a common parasitic species of California gnatcatchers, least Bell’s vireo, and other open cup nesting bird species. Lastly, it is my understanding that erosion is more prevalent of trails frequented by equestrians, thus causing water quality concerns and the need for greater trail maintainence.” (pers email communication, dated 6/17/2009 from Mark Pavalka ((760)431-9440), USFWS to Tim Milligan, San Bernardino County Open Space District).

I’d like to take this opportunity to clarify that the Sage Council is not attempting to get the existing stable and arena removed that is used by “Rose Bowl Riders.” The Sage Council is enforcing our Settlement Agreement with the City, dated 2/19/2004 (Settlement or Sage Agreement). We are opposed to all proposed new trails and the expansion of trails for bikes, hikers, horses and motorized vehicles. The placement of one such proposed trail/road would require the creation of a new riding ring for equestrians. This proposed trail and others should not be approved. The current project proposal does not include or consider the removal of existing trails. However, any existing or proposed trails/roads that would have a negative impact on habitats and/or endangered species – especially in the area designated as a protected natural area in the Sage Agreement – must be removed and restored for the conservation of natural resources.

On a personal note, from 9 -18 years of age I rode, owned, trained horses and competed at the Pacific Coast and national level for hunter jumpers. In the U.S. Army, I trained horses and riders for the U.S. Pentathlon and Olympics, as well as other positions. I have personal knowledge and emotions when it comes to horses and equestrians. No matter how much personal fun and recreational enjoyment there is with horses, the need for conserving natural resources and biological diversity is much greater.

The Arroyo Seco is a biological treasure and deserves to be treated as such by the City, rather than a recreational area – as proposed. Rather than proposing destructive activities, the City should be taking actions to restore disturbed natural communities using scientifically sound ecological methods. For numerous years the City has failed to perform appropriate biological studies and USFWS “protocol surveys” for listed species, under the Endangered Species Act, prior to developing plans and project designs. Protocols for conducting

species surveys are available from the USFWS Offices and online. Any knowledgeable and qualified biologists should know how to perform protocol surveys. Once again, there have not been appropriate surveys performed. Instead, outdated and partial biological information is being referred to, by the City, for this Project. Sage Council recommends that the City consult formally with the appropriate CDFG, USFWS and ACOE biologists that are assigned to the region.

Spirit of the Sage Council comments 2-1-2010

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The Project area is within and adjacent to federally designated waters and blue line streams requiring 401 and 404 permits. In addition, the effected project area may "take" listed species (Southwest Arroyo Toad, Red legged frog, Yellow legged mountain frog, California gnatcatcher, Los Angeles Pocket Mouse, least Bell's vireo, and others) requiring the City to consult with USFWS under Section 7 or 10 of the ESA and an EIS prepared under the National Environmental Protection Act (NEPA). CDFG must also be consulted with under the California Endangered Species Act (CESA) and Native Plant Protection Act.

Significant changes in the environment have taken place over the past six years and since the ASMP and HMP were adopted by the City. One such example of a significant change is the "Station" fire that recently occurred north of the Project area. The fire has temporarily impacted habitat and numerous species have relocated and utilize the project site, including trees that the City proposes to remove. The City needs to perform biological surveys and use best scientific methods and modeling to address species "population dynamics" and distribution to obtain the information needed for the City to make an "informed decision." The very proposal not to prepare an EIR for this proposed project is ridiculous, irresponsible and if approved will be unlawful. The Sage Council requests that the City prepare a full EIR/EIS and perform new biological surveys – on and adjacent to the Project site, so that the public and City Council can be fully informed regarding the Projects negative impacts on the environment. Without having adequate updated biological information the City is unable to design and approve "Alternatives" to the Project that provide for conservation, other than a "No Project Alternative." This Project approval puts the "horse before the cart" and leads the Sage Council, and local residents, to believe that the City is trying to disregard and limit environmental data. For these reasons and others, the Sage Council is opposed to the Projects proposals and requests the "No Project Alternative."

At one time, the City protected Hahamongna and had patrols to keep out unauthorized uses. Within a ten year period, the City has reversed protections and enforcement of the area under conservation easement to inviting everyone to come on in and abuse the natural resources – in the name of "recreation." Is this so that the City can get some of the State Bond grants and other government funds? Yet after 6 years, with all the public funds received or Settlement with the Sage Council, Hahamongna is not being protected, conserved and restored which is legally required. Whether a lack of institutional memory, deliberate disregard or the hopes that the public will not notice, it appears that these Projects as proposed are unlawful and deceitful. Seems to me that the City could get in legal problems for possible fraudulent use of State and Federal funds if grant proposals are being submitted for roads and recreational activities where there are known conservation easements, protected natural areas and endangered species.

The City documents and maps are deliberately inaccurate and misleading regarding habitat types and natural communities i.e. "Sage Scrub" is slang, not the name of the plant community. Even though at the beginning of his report he says he is using definitions by Todd Keeler-Wolf, he did not. The accurate name of the "sage scrub" is Riversidian Alluvial Sage Scrub (RASS) and Riversidean Alluvial Fan Sage Scrub (RAFSS) both are the rarest sub-association of Coastal Sage Scrub (CSS). CDFG & FWS consider this natural community

Spirit of the Sage Council comments 2-1-2010

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"high priority" for conservation. The Natural Diversity Data Base (NDDDB) has it listed as S1.1 "very threatened" within the State and G1 Globally imperiled. CSS and its sub-associations are scientifically known to support over 100 rare and endangered species, yet, the Project documents are silent to this biological fact. Why?

I believe the area is designated by the State as a "Significant Natural Area" (SNA) but some research would need to be done to make sure and get the identifying number of the SNA. This can be done by calling the CDFG NDDDB in Sacramento and the CDFG biologist for the Project area.

The Sage Council is submitting the following 15 published scientific literature that explains in greater detail why the City should not allow and approve of trails in Hahamongna, Annex areas and the rest of the Arroyo Seco – whether new, modified or expanded. These referenced publications, documents and photo are to be included into the administrative record. Our intent, for submitting these scientific publications, is to educate City staff, Council and the Public. If the "Protected Natural Areas" are truly going to be protected and conserved, then the City must prevent and eliminate trails, paths, roads, bikeways, parking lots, dogs and horses/equestrians.

- *Ecological Impacts of Mountain Biking: A Critical Literature Review*. **By Jason Lathrop** (Missoula, MT) June 29, 2003, Published on Wildlands CPR (<http://www.wildlandscpr.org>)
- *Wildlife Responses to Recreation and Associated Visitor Responses*. 2003. Authors - A. Taylor and R. Knight, Colorado State University. Published in- *Ecological Applications* 13(4), 2003. Pp 951-963 by Ecological Society of American
- *Environmental Impacts of Mountain Biking: Science Review and Best Practices* – by Jeff Marion and Jeremy Wimpey.
- *Behavioral Responses of North American Elk to Recreational Activity*. Naylor, et al 2009, published in *The Journal of Wildlife Management*. Pp 328-338.
- *Assessing the Effects of Human Activities on Wildlife*. Steidel and Powell. Published by the George Wright Forum, *Visitor Impact Monitoring*, Volume 23 – Number 2 (2006) pp 50-58.
- *Statistical methods for analyzing responses of wildlife to human disturbance*. Preisler et al 2006. Published by *Journal of Applied Ecology* 2006, Vol 43, pp164-172
- *Quiet, Nonconsumptive Recreation Reduces Protected Area Effectiveness*. By Sarah Reed and Adina Merenlender, UC Berkley, CA. Published by *Conservation Letters* 1 (2008)pp 146 -154.
- *The Ecological Effects of Roads on Wetlands*. By Kinza Cusic. Published by Wildlands CPR, *RoadRip Reporter Issue Mar/Apr 2001*, Vol. 6 #2
- *A Critique of "A Comparative Study of Impacts to Mountain Bike Trails in Five Common Ecological Regions of the Southwestern U.S."* (White et al 2006) By Michael J. mjvande@pacbell.net
<http://home.pacbell.net/mjvande>
- *Comparing the Ecological Effects of Linear Developments on Terrestrial Mammals*. By Sharon Mader, *Road-RIPorter Issue: Autumn Equinox 2006, Volume 11 #3*, Published on Wildlands CPR (<http://www.wildlandscpr.org>)
- *Effect of Roads on Arthropods* By Leslie Hannay, *Road-RIPorter Issue: July/August 2001, Volume 6 #4*, Published on Wildlands CPR (<http://www.wildlandscpr.org>)
- *Where Have All the Songbirds Gone? Roads, Fragmentation, and the Decline of Neotropical Migratory Songbirds*. By Adam Switalski, *Road-RIPorter Issue: Fall Equinox 2003, Volume 8 #3*, Published on Wildlands CPR (<http://www.wildlandscpr.org>)
- *Paving Paradise: The Ecological Effects of Road Improvement*. By Shannon Donahue.
- *Road-RIPorter Issue: Autumn Equinox 2008, Volume 13 # 3*, Published on Wildlands CPR (<http://www.wildlandscpr.org>)
- *The Impacts of Mountain Biking on Wildlife and People – A Review of the Literature*. By Michael J. Vandeman, Ph.D. July 3, 2004

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- *The Role of Horses in the Introduction and Spread of Noxious Weeds.* By Robin Ikeda, Professor of Biology, Chaffey College, CA., May 2001

In addition, the Sage Council in incorporating, by reference, our other email and comment letters received by the City (dated 11/2/09) as they apply to City impacts the Project and proposal area and natural resources.

Thank you for your consideration. Please do not hesitate in contacting me if you have any questions and are need of our assistance.

Sincerely,
Leeona Klippstein, Executive Director
Spirit of the Sage Council

Copies to:

City Attorney Fuentes <tfuentes@cityofpasadena.net>,
City Manager Beck <mbeck@cityofpasadena.net>,
Rosa Laveaga <rlaveaga@cityofpasadena.net>,
<mjomsky@cityofpasadena.net>,

Law Office of Craig A. Sherman
Mary Barrie, Friends of Hahamongna
Hugh Bowles, Hahamongna Watch
CDFG
USFWS

A Critique of "A Comparative Study of Impacts to Mountain Bike Trails in Five Common Ecological Regions of the Southwestern U.S." (White et al 2006)

Michael J. Vandeman

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"If a journalist writes an erroneous article, you can send a letter to the editor. If a businessman does not know what is going on, he will probably lose money and his job as well. But, oddly enough, academics can make mistakes, gross and manifest ones, time and again, and get away with it. For they operate on the basis of peer review. Once the overall community has been converted to a given position, they regularly coopt members with the same views. And thus there is no one to criticize them. Indeed, the critics are neatly kept out of the academic establishment by those who are already in it." Jon Woronoff, *Japan as Anything But Number One*, p.288

I am concerned about a trend I have noticed for advocates of mountain biking to publish articles on mountain biking impacts that purport to be scientific studies, but in fact are designed and intended to promote mountain biking by minimizing its impacts and by drawing conclusions that don't follow from their data. The White et al (2006) study is a good example of this genre. The authors claim to show that mountain biking impacts (specifically, erosion) are no worse than those of hiking. However, in drawing this conclusion, they neglect to state clearly the question (hypothesis) they are trying to answer, rely on studies that are faulty, misinterpret other studies, make subjective judgments where science requires statistics, and use a research design that is not capable of supporting the conclusions they draw. The danger is that people will quote such conclusions out of context, as if they were really supported by the research, which they are not.

I numbered my points to make it easier to coordinate their reply with my comments. I would like the authors to respond to each point using the same numbering scheme, so that I can see that they have addressed every point.

1. Are the authors mountain bikers? They seem to be promoting mountain biking -- trying to make it seem environmentally acceptable.
2. Why does the abstract and paper make comparisons between hiking and mountain biking impacts? They apparently didn't collect any data that would allow them to make such a comparison. In fact, the only way to make such a comparison is with an experimental design, not a survey, as they have done. It is logically impossible to draw any useful conclusions from a design that includes measurements taken at only a single point in time. The data (trail width and depth) provide no way to distinguish between mountain biking impacts and the effects of trail construction, trail maintenance, wind, rain, hiking, animals, or any other factors.
3. The comparison of mountain biking vs. hiking impacts seems to rest on three bits of information: Wilson and Seney (1994), Thurston and Reader (2001), and a vague, non-statistical judgment about their measurements being "similar" to those of hiking trails. The Wilson and Seney study was discredited by Vandeman (2004), because they didn't measure erosion accurately: they dripped water on the trail and collected and weighed the solids carried into the collecting pan. This only takes into account very fine particles able to be transported by such "artificial rain"; it ignores all of the larger particles dislodged by feet or tires. The Wilson and Seney study thus provides no useful comparison between hiking and mountain biking impacts.

4. They also misrepresented Thurston and Reader's results. Actually, Thurston and Reader found that after 500 passes, mountain biking had greater impacts on plants than hiking. It doesn't take long to accumulate 500 passes. Some trails will receive that amount of traffic (250 visitors) in a day or two. So this study actually provides no support for White et al's claim that hiking and mountain biking impacts are "comparable" (whatever that means).

5. The authors provide no other quantitative, statistical comparison between hiking and mountain biking impacts. The only way to do that would be to do an experimental study, where all factors except hiking vs. mountain biking are controlled (in other words, apply equal amounts of hiking and mountain biking to identical trails and measure the impacts using before-and-after measurements).

6. Their estimate of the number of mountain bikers ("21% of the American public") seems grossly exaggerated. I think they need to find a more reliable source for that information.

7. They make claims about the benefits of mountain biking. This seems out of place in a scientific paper, especially since they provide no evidence for any such (net) benefits. Such claims are usually biased by tallying alleged positive benefits without subtracting the harm caused by mountain biking (e.g. accidents, environmental damage, wildlife impacts, and driving other trail users off of the trails).

8. They claim "management actions that limit access can be controversial and raise issues of equity", but provide no evidence. I'm not aware of any limited access or issues of equity. Since only bicycles, not people, have ever been restricted, I don't see how they can make such a claim. In fact, it is very unlikely that there are any equity issues, since it was already determined by a federal court that bikes may be banned from trails (see <http://home.pacbell.net/mjvande/mtb10>).

9. I'm glad they mention "questionable studies". There are, indeed, a lot of them! But I wonder why they included some of them in their references, such as Wilson and Seney, and presented them without comment, as if they were sound science (see Vandeman 2004). They also misrepresented Thurston and Reader's results, as I explained above.

10. On p.24 they mention "visitor-related factors", but omitted impacts on other trail users. I think that that is one of the major impacts of mountain biking. I'm aware of many parks where mountain bikers have driven other trail users off the trails and out of the parks.

11. On p.26 they claim that "the magnitude of ecological impacts attributed to mountain biking appear to be comparable to those of hiking". "Comparable" is vague or meaningless as a scientific term. The Earth is comparable to the Sun (they can be compared). I think that they also misrepresent the implications of those studies (see Vandeman 2004).

12. On p.29 they mention "user-created" trails. Why use a euphemism, in a scientific paper? Those trails were built illegally. The authors only add to the impression that their paper is deliberately slanted.

13. They make a good point on p.36 about trail users having to leave the trail to allow mountain bikers to pass. This is a good reason to ban bikes from trails: they lead inevitably to trail widening. But the authors

don't suggest banning bikes as an option, even though it is a very common management tool. This adds to the impression of bias.

14. On p.37 they claim that "the width and depth" of their trails is "similar" (not a scientific term, since it is so vague) to that of Marion & Leung, although their trails averaged 32" wide (median 26") and his median trail width was 17", so theirs was 50% greater. Why be scientifically precise in some contexts, but totally vague when they want to advocate for mountain biking? It is scientifically meaningless to compare trails in different areas, since the differences or similarities could be caused by many irrelevant factors, such as differences in soil type, kind and amount of use, management policies, etc.

15. Also on p.37 they claim that "The findings from our study thus reinforce results from previous research that certain impacts to mountain bike trails, especially width, are comparable or less than hiking ... trails". On the contrary, they presented zero data on the width of hiking trails. In fact, they gave evidence (see # 13 above) that mountain biking tends to widen hiking trails, by forcing hikers and equestrians off the trail.

16. They also say "average width in our study was similar to lower use mountain bike trails in Australia ... which [were] from 17 in. to 26 in." "Similar" is not a scientific term. It would appear, on the contrary, that their trails were much wider than those ones. But as I mentioned earlier, it is meaningless to compare trails in different areas. There is no way to determine the cause of any differences or lack of differences.

17. They claim on p.37 that "mountain biking is likely a sustainable activity on properly managed trails". What does that mean? They have just documented erosion and trail widening. Those effects are not "sustainable"; they constitute environmental damage, in addition to that of other trail users. They go on to mention several other negative effects of mountain biking (wildlife impacts and spread of exotic species) that also contradict the idea that mountain biking is "sustainable". It would appear that they are bending over backwards to conclude that mountain biking is acceptable.

18. I fail to see the value of "the introduction of CERs" (Common Ecological Regions). It seems to have no relevance to policy or management, unless we are going to prohibit mountain biking in desert areas where trails can't be clearly delimited. But we already know that trail widening is harmful: it represents habitat destruction.

In summary, I was bothered most by the authors' unquestioning acceptance at face value of (or even misrepresenting) some rather questionable studies, and their drawing conclusions not warranted by their data. If they really want to do science, and not just promote mountain biking, I think they should adhere better to what the data tell us.

Actually, it's much easier than trying to slant results. Permit me to tell a little story. I was in graduate school at UCLA, was trying to write a literature-review paper, and was having a terrible time writing it -- until I realized that I was trying to make the results come out the way I wanted them to. When I decided to "just tell it like it was" and let the cards fall as they might, the paper almost wrote itself. It became easy.

Mountain biking is such a contentious issue that there is a great temptation to slant the results to support one's preferred management policy. The result is a lot of questionable studies that don't really further science and don't really help provide sound scientific management of our precious remaining wildlife habitat. I suggest that they first find out what kind of answers are needed (especially by land managers), and then design research specifically to answer those questions, instead of first collecting data, and then trying to see how they can force it to yield the conclusions that they desire.

References:

Thurston, E. and R. J. Reader. 2001. Impacts of experimentally applied mountain biking and hiking on vegetation and soil of a deciduous forest. *Environmental Management* 27:397-409.

Vandeman, M. J. 2004. The Impacts of Mountain Biking on Wildlife and People -- A Review of the Literature. Available at <http://home.pacbell.net/mjvande/scb7>.

White, D. D., M. T. Waskey, G. P. Brodehl, and P. E. Foti. 2006. A Comparative Study of Impacts to Mountain Bike Trails in Five Common Ecological Regions of the Southwestern U.S. *Journal of Park and Recreation Administration*, 24:2, 21-41.

Wilson, J. P. and J. Seney. 1994. Erosional impact of hikers, horses, motorcycles, and off-road bicycles on mountain trails in Montana. *Mountain Research and Development*. 14:77-88.

Assessing the Effects of Human Activities on Wildlife

Robert J. Steidl and Brian F. Powell

HUMAN ACTIVITIES THAT AFFECT WILDLIFE AND THEIR HABITATS are pervasive and increasing. Effects of these activities are manifested at all ecological scales, from short-term changes in the behavior of an individual animal through local extirpations and global extinctions (Pimm et al. 1995; Chapin et al. 2000). Consequently, understanding the effects of humans on wildlife and wildlife populations, as well as devising strategies to ameliorate these effects, is an increasing challenge for resource managers. Given the conflicting mandate to both encourage human use and to protect sensitive natural resources in national parks, developing reliable strategies for assessing and monitoring the effects of human activities on natural resources is essential to ensuring appropriate stewardship of these resources.

Given the breadth of relevant human activities, the diversity of wildlife species potentially affected, and the multitude of ways they may be affected, scientists and resource managers planning to assess the effects of human activities on wildlife must be careful to state their study objectives explicitly. In all cases, these objectives should specify the human activity of interest; the timing, intensity (frequency, duration) and spatial extent of the activity; the focal wildlife species of interest; and the range of ways that species might respond to the activity—that is, the objectives should define the “disturbance context” in which the human-wildlife interaction occurs (Steidl and Anthony 2000). Given well-defined objectives and a clear disturbance context, a measure that gauges the response of the wildlife species of interest to the human activity must be selected carefully.

In this paper, we provide a general classification for the ways in which human activities can affect wildlife, distinguish among general types of relevant studies

based on different objectives, and identify appropriate measures for gauging wildlife response for different types of studies. Our goal is to provide a conceptual framework to guide studying and monitoring human-wildlife interactions, specifically those deriving from non-consumptive recreational activities.

Classifying human activities

Virtually all human activities can affect wildlife populations either positively or negatively. Those activities that are likely to have adverse effects can be divided into those that function primarily by altering the physical environment in a relatively permanent way and those that cause changes to an animal's behavior. Activities that alter the physical environment change the amount or the suitability of habitat for a species. Widespread and large-scale examples include activities that directly alter the structure and composition of the landscape, such agriculture, forestry, livestock grazing, and unregulated off-road vehicle use. In

general, these are land use or land management practices that change the trajectory of ecological succession, including altering the dominant plant communities and the abiotic features of a site. The ecological effects of these activities on vertebrates are readily apparent and have been relatively well studied (e.g., Blair 1996; Spies et al. 1996; Lichstein et al. 2002).

Perhaps less obvious in their ecological impacts are those non-consumptive human activities that do not appreciably alter the physical environment but nonetheless can affect wildlife adversely. Examples include recreational activities such as hiking, wildlife viewing, and boating—all common activities for visitors in parks. As recreational use increases in wilderness and other protected areas, sensitive wildlife species may be increasingly affected by these activities (Steidl and Anthony 2000). The magnitude of effects of recreational activities on wildlife is influenced by many factors, including the type, duration, frequency, magnitude, location, and timing of the disturbance, as well as the particular species of interest. Although effects of these activities are typically of short duration, cumulatively they can effect wildlife populations adversely in both the short- and long-term (Burger 1981; Henson and Grant 1991; Fernandez and Azkona 1993; Holmes et al. 1994; Steidl and Anthony 1996, 2000; Swarthout and Steidl 2001, 2003; Mann et al. 2002; Johnson et al. 2005). Observed effects include increased energetic stresses (Bélanger and Bédard 1990), changes in activity budgets (Steidl and Anthony 2000; Mann et al. 2002; Swarthout and Steidl 2001, 2003), displacement from preferred environments (McGarigal et al. 1991), and reduced productivity through abandonment and decreased survival of young

(Tremblay and Ellison 1979; White and Thurow 1985).

Although there are human activities that cause physical changes to park environments, such as construction of building and roads, or vegetation destruction resulting from overuse of particular areas, most wildlife-related impacts away from these areas likely result from short-term recreational pursuits of visitors. We focus the remainder of our discussion on these types of activities.

Types of studies

Given the wide range of potential information needs and study objectives, we distinguish between two fundamentally different kinds of studies: research and monitoring. These can be classified primarily based on their different objectives and secondarily based on different durations. *Research studies* include an objective related to answering specific questions and are usually of relatively short duration (1–3 years). An example would be a study conceived to assess the distance at which a population of birds flushes in response to a particular visitor activity, such as hiking or mountain biking (e.g., Swarthout and Steidl 2001). The goal for this type of study might be to reliably establish the distance at which birds flush in response to the activity so that the activity can be restricted in particular areas to reduce disturbance frequency and minimize adverse effects. In contrast, *monitoring studies* involve quantifying changes in characteristics of resources over time, are usually not driven by particular questions, and are always intended to be undertaken over long-time periods (Steidl 2001). The goal for monitoring studies is almost always related to quantifying changes in characteristics of resources over time. A third kind of

study, which we only mention here, is a hybrid between research and monitoring studies. *Impact assessment studies* are designed to measure the effects of a planned activity or action within the context of a previously established monitoring program. These are often large-scale studies where the fundamental approach is to establish a monitoring program based on a series of sampling sites, a subset of which is eventually subject to being affected by the impact. The effect of the impact is estimated by comparing how sites subject to the impact change relative to control or reference sites over time (Green 1979). The application of these studies is useful to natural resource managers interested in assessing the effects of management actions, such as opening or closing particular trails or other facilities, especially when replication of the impact is impossible.

All types of studies benefit from careful application of the basic tools of research design, which include randomization, replication, reduction of error, incorporation of adequate controls, and understanding how the scope of inference for any study is dictated in part by the way study units are selected (Ramsey and Shafer 2001).

Research studies. Specific resource management questions about human-wildlife interactions are best answered through well-designed research studies, either experimental or observational. Questions that can be answered experimentally, which always involves some type of manipulation by the investigators, are more powerful than observational studies because they provide strong evidence of a causal link between the activity and the response measure. Observational studies cannot establish cause-and-effect inferences because of the potential for confounding by

additional factors that may have influenced the response measure. Observational studies, therefore, provide only correlative inferences, yet can offer strong evidence when designed carefully. There is a vast literature on conceiving and designing effective research studies on wildlife populations (e.g., Morrison et al. 2001).

Monitoring. Ecological monitoring studies almost always focus on quantifying changes in characteristics of resources over time. Consequently, monitoring studies are correlative and can therefore quantify patterns and associations but cannot establish causal links between changes in the resource of interest and changes in levels of human activity or other environmental characteristics. For example, if we observe a decline in abundance of a species in an area over time concurrent with an increase in a particular type of human activity, we cannot claim that the increase in human activity caused the decrease in abundance. Despite their limited inference relative to randomized experiments, monitoring studies can still provide information that is valuable for understanding and reducing human-wildlife conflicts (Burger et al. 2004) especially when designed as part of an integrated monitoring program that encompasses a range of biotic and abiotic resources. Specifically, by measuring other environmental characteristics that are thought to affect changes in the wildlife response measure of interest (e.g., vegetation structure, food resources, rainfall), the ability to detect temporal and spatial changes in the resource is increased and the likelihood that the observed change was driven by a confounding variable is reduced. Lastly, the information provided by monitoring studies can be increased if they are designed to be comparative—that is, designed to con-

trast wildlife responses in areas of concern or impact with those in control or reference areas (e.g., Romero and Wikelski 2002).

Monitoring visitor impacts on wildlife is different than most observational studies because changes in parameters of interest are designed to be measured for long time periods, usually spanning multiple generations. Therefore, well-designed monitoring programs should provide sufficient temporal and spatial coverage as well as the flexibility to address a range of potential impacts, the nature and extent of which may be unknown when the program is being designed.

Choosing an appropriate wildlife response measure

Understanding both the short- and long-term consequences of interactions between humans and wildlife requires that a response measure be chosen that reflects the temporal and spatial scales appropriate to the human activity being assessed (Table 1). Many attempts to understand the effects of human activities on wildlife have focused on measures that are most appropriate for long-term assessment (i.e., 5–10 years or more) such as abundance (e.g., Mathisen 1968; Fraser et al. 1985; Westmoreland and

Best 1985), reproductive success (e.g., Fernandez-Juricic 2000), and species diversity (e.g., Francl and Schnell 2002). Although these are clearly important measures, they are not appropriate for assessing all types of human activities because changes in behavior and space use are often overlooked, both of which can have long-term consequences for populations (Holt-huijzen 1989; Anthony et al. 1995; Gill et al. 2001). Changes in behavior are consequential because they can ultimately affect reproductive success, survival, and habitat occupancy, which in turn can reduce population viability, especially for rare, threatened, or endangered species. Response measures that include aspects of behavior, such as activity budgets or space use, are most appropriate for short-duration human activities such as hiking.

As a general guideline, wildlife response measures should reflect the temporal and spatial scales of the human activity of interest, including the type of activity, its daily and seasonal timing, duration, and frequency, especially during initial investigations. The choice of the species or population to study is also critical, because species vary widely in their responses to human activities as do different populations of the

Table 1. Potential response measures for assessing effects of human activity on wildlife and wildlife populations.

Appropriate study period	Measure
Short-term	Physiological responses — heart rate, stress hormones Behavior and activity budgets Space and habitat-use
Long-term	Reproductive success and productivity Survival or mortality rates Abundance or density Distribution or occupancy rates Species richness Species diversity

same species, which can depend on their previous exposure to the human activity of interest. Assuming the choice of species and populations has been made or was mandated by legislation, the response measure should match the disturbance context, which is defined, in part, by the time scale of the human activity of interest. For most research studies, short-term responses seem most appropriate, whereas for most monitoring studies, long-term responses seem most appropriate (Table 1).

Effects of human activities on bald eagles (*Haliaeetus leucocephalus*) have been relatively well studied, so we'll use this species to illustrate the importance of choosing appropriate response measures. Many research studies have used reproductive success as the response measure and have reported no relationship between the level of human activity and reproductive success (e.g., Mathisen 1968; Fraser et al. 1985). In some cases, these negative results may reflect two fundamental problems: a disconnection between the scale of human activity being studied and the response measured (a short-term study and a long-term response measure) and a likely potential problem assessing impacts that have been in place for years.

With regard to the disconnection between the scale of the human activity and the response measure, the nesting season for bald eagles is long (>120 days), so short-term activities are unlikely to effect reproduction unless the activity is very intense. In most studies where bald eagles were disturbed by researchers approaching nests, the activities were of short duration (usually less than an hour) relative to the nesting period (Grier 1969; Fraser et al. 1985). Once a pair has made the decision to breed

and has invested energy into producing offspring, they are more difficult to displace with such short-duration impacts relative to a pair that has not yet nested or to individuals that are not breeding (Trivers 1974). This investment may explain why some species abandon nesting sites the year after, rather than the year of, a short but intense disturbance near the nest (Platt 1977).

Populations that have long been exposed to a particular human activity may have already responded to the activity or may have become habituated. Because many studies are initiated well after the human activity was established, a conclusion of "no effect" may be misleading because consequential effects may have already occurred. For example, changes in distribution of bald eagle territories away from a new source of human activity did not occur until several years after the activity was established (Gerrard et al. 1992). If the eagles that are most sensitive to human activities abandon their nests after the level of human activity exceeds some threshold level but before a study is initiated, the chances of observing any residual effects would be low. These "time lags" may obscure changes in site occupancy unless viewed on longer time scales (Wiens 1986). And although the conclusion of no effect is likely appropriate for the specific locations where these data were collected, applying management recommendations to other areas based on information gleaned from these kinds of biased samples could have adverse consequences. Without thinking carefully about the contextual issue of previous exposure, activities affecting wildlife may be classified incorrectly or inappropriate management recommendations made.

Planning monitoring studies that include human-wildlife issues

Monitoring studies that include an objective to assess changes in wildlife populations in response to changes in visitor activities will need to quantify human activities carefully. Sampling should be designed to capture the amount, types, and intensity of the human activity as well as how the activity varies spatially and temporally (Gregoire and Buhyoff 1999; Watson et al. 2000). Carefully quantifying these elements will increase the ability to relate trends in the resource with changes in levels and types of human activity. As we mentioned previously, monitoring changes in wildlife populations is more efficient when integrated into a broader program that includes measuring additional biotic and abiotic parameters, especially those that might be directly affected by human activities of particular interest.

There are a number of tools for designing studies that can be used to increase the success of a monitoring program while balancing the interrelationships and trade-offs among sampling effort, cost, and the overall ability of the program to detect trends in resources (e.g., www.pwrc.usgs.gov/mon-manual/). In general, sampling designs that include elements to reduce sampling variability, such as stratified or cluster sampling, tend to be more efficient than those

that do not account for heterogeneity of the response measure across the study area (Thompson 2002). Power analysis can guide some of the more challenging design questions, such as how many samples are necessary to meet study objectives, how large a trend is likely to be detected with a given amount of sampling effort, and what the probability of detecting a particular trend that is considered biologically meaningful might be (Gerrodette 1987; Steidl and Thomas 2001).

Monitoring changes in natural resources requires a detailed statement of goals and a careful choice of parameters to measure. To link monitoring to management, a threshold in the response measure should be identified such that when the threshold is reached, managers are alerted that resource levels have reached an unacceptable level and some sort of action needs to be taken. A tight integration between monitoring and management is critical, as monitoring programs often fail because they were established without involvement of managers (Noon 2003). Those programs that are linked clearly to management objectives and are designed to provide regular updates on the status and trends of natural resources and human activities will be most useful and therefore will have the highest chances of persisting over the long term.

References

- Anthony, R.G., R.J. Steidl, and K. McGarigal. 1995. Recreation and bald eagles in the Pacific Northwest. In *Wildlife and Recreationists: Coexistence through Management and Research*. R.L. Knight and K.J. Gutzwiller, eds. Washington, D.C.: Island Press, 223-242.
- Bélanger, L., and J. Bédard. 1990. Energetic cost of man-induced disturbance to staging snow geese. *Journal of Wildlife Management* 54, 36-41.
- Blair, R.B. 1996. Land-use and avian species diversity along an urban gradient. *Ecological Applications* 6, 506-519.

- Boyle, S.A., and F.B. Sampson. 1985. Effects of nonconsumptive outdoor recreation on wildlife: A review. *Wildlife Society Bulletin* 13, 110-116.
- Burger, J. 1981. The effect of human activity on birds at a coastal bay. *Biological Conservation* 21, 231-241.
- Burger, J., C. Jeitner, K. Clark, and L.J. Niles. 2004. The effects of human activities on migrant shorebirds: successful adaptive management. *Environmental Conservation* 31, 283-288.
- Chapin, F.S. III, E.S. Zaveleta, V.T. Eviner, R.L. Naylor, P.T. Vitousek, H.L. Reynolds, D.U. Hooper, S. Lavorel, O.E. Sala, S.E. Hobbie, M.C. Mack, and S. Diaz. 2000. Consequences of changing biodiversity. *Nature* 405, 234-242.
- Fernandez, C., and P. Azkona. 1993. Human disturbance affects parental care of marsh harriers and nutritional status of nestlings. *Journal of Wildlife Management* 57, 602-608.
- Fernandez-Juricic, E. 2000. Local and regional effects of pedestrians on forest birds in a fragmented landscape. *Condor* 102, 247-255.
- Francl, K.E., and G.D. Schnell. 2002. Relationships of human disturbance, bird communities, and plant communities along the land-water interface of a large reservoir. *Environmental Monitoring and Assessment* 73, 67-93.
- Fraser, J.D., L.D. Frenzel, and J.E. Mathisen. 1985. The impact of human activities on breeding bald eagles in north-central Minnesota. *Journal of Wildlife Management* 49, 585-592.
- Gerrard, J.M., P.N. Gerrard, P.N. Gerrard, G.R. Bortolotti, and E.H. Dzus. 1992. A 24-year study of bald eagles on Besnard Lake, Saskatchewan. *Journal of Raptor Research* 26, 159-166.
- Gerrodette, T. 1987. A power analysis for detecting trends. *Ecology* 68, 1364-1372.
- Gill, J.A., K. Norris, and W.J. Sutherland. 2001. Why behavioural responses may not reflect the population consequences of human disturbance. *Biological Conservation* 97, 265-268.
- Grier, J.W. 1969. Bald eagle behavior and productivity responses to climbing to nests. *Journal of Wildlife Management* 33, 961-966.
- Gregoire, T.G., and G.J. Buhyoff. 1999. *Sampling and Estimating Recreational Use*. General Technical Report PNW-GTR-456. Portland, Ore.: U.S. Department of Agriculture-Forest Service, Pacific Northwest Research Station.
- Green, R.H. 1979. *Sampling Design and Statistical Methods for Environmental Biologists*. New York: Wiley.
- Henson, P., and T.A. Grant. 1991. The effects of human disturbance on trumpeter swan breeding behavior. *Wildlife Society Bulletin* 19, 248-257.
- Holmes, T.L., R.L. Knight, L. Stegall, and G.R. Craig. 1994. Responses of wintering grassland raptors to human disturbance. *Wildlife Society Bulletin* 21, 461-468.
- Holthuijzen, A.M.A. 1989. *Behavior and Productivity of Nesting Prairie Falcons in Relation to Construction Activities at Swan Falls Dam*. Boise: Idaho Power Co.
- Johnson, C.J., M.S. Boyce, R.L. Case, H.D. Cliff, R.J. Gau, A. Gunn, and R. Mulders. 2005. Cumulative effects of human developments on arctic wildlife. *Wildlife Monographs* 160.
- Lichstein, J.W., T.R. Simons, and K.E. Franzreb. 2002. Landscape effects on breeding song-

- bird abundance in managed forests. *Ecological Applications* 12, 836–857.
- Mann, S.L., R.J. Steidl, and V.M. Dalton. 2002. Effects of cave tours on breeding cave myotis. *Journal of Wildlife Management* 66, 618–624.
- Mathisen, J. E. 1968. Effects of human disturbance on nesting of bald eagles. *Journal of Wildlife Management* 32, 1–6.
- McGarigal, K., R.G. Anthony, and F.B. Isaacs. 1991. Interactions of human and bald eagles on the Columbia River estuary. *Wildlife Monographs* 115.
- Morrison, M.L., W.M. Block, M.D. Strickland, and W.L. Kendall. 2001. *Wildlife Study Design*. New York: Springer-Verlag.
- Noon, B.R. 2003. Conceptual issues in monitoring ecological resources. In *Monitoring Ecosystems: Interdisciplinary Approaches for Evaluating Ecoregional Initiatives*. D.E. Busch and J.C. Trexler, eds. Washington, D.C.: Island Press, 27–72.
- Pimm, S.L., G.J. Russell, J.L. Gittleman, and T.M. Brooks. 1995. The future of biodiversity. *Science* 269, 347–350.
- Platt, J.B. 1977. The breeding behavior of wild and captive gyrfalcons in relation to their environment and human disturbance. Ph.D. dissertation, Cornell University, Ithaca, New York.
- Ramsey, F.L. and D.W. Schafer. 2001. *The Statistical Sleuth: A Course in Methods of Data Analysis*. 2nd ed. Pacific Grove, Calif.: Duxbury Press.
- Romero, L.M., and M. Wikelski. 2002. Exposure to tourism reduces stress-induced corticosterone levels in Galápagos marine iguanas. *Biological Conservation* 108, 371–374.
- Spies, R.B., S.D. Rice, D.A. Wolfe, and B.A. Wright. 1996. The effects of the Exxon Valdez oil spill on the Alaskan coastal environment. *American Fisheries Society Symposium* 18, 1–16.
- Steidl, R.J. 2001. Practical and statistical considerations for designing population monitoring programs. In *Wildlife, Land and People: Priorities for the 21st Century*. R. Field, R.J. Warren, H. Okarma, and P.R. Sievert, eds. Proceedings of the Second International Wildlife Management Congress. Bethesda, Md.: The Wildlife Society, 284–288.
- Steidl, R.J., and R.G. Anthony. 1996. Responses of bald eagles to human activity during the summer in interior Alaska. *Ecological Applications* 6, 482–491.
- . 2000. Experimental effects of human activity on breeding bald eagles. *Ecological Applications* 10, 258–268.
- Steidl, R.J., and L. Thomas. 2001. Power analysis and experimental design. In *Design and Analysis of Ecological Experiments*. 2nd ed. S. Scheiner and J. Gurevitch, eds. Oxford, U.K.: Oxford University Press, 14–36.
- Swarthout, E., and R.J. Steidl. 2001. Flush responses of Mexican spotted owls to recreationists. *Journal of Wildlife Management* 65, 312–317.
- . 2003. Experimental effects of hiking on Mexican spotted owls. *Conservation Biology* 17, 307–315.
- Thompson, S.K. 2002. *Sampling*. 2nd ed. New York: Wiley.
- Tremblay, J., and L.N. Ellison. 1979. Effects of human disturbance on breeding of black-crowned night herons. *Auk* 96, 364–369.
- Trivers, R.L. 1972. Parental investment and sexual selection. In *Sexual Selection and the*

- Descent of Man, 1871-1971*. B. Campbell, ed. Chicago: Aldine, 136-179.
- Watson, A.E., D.N. Cole, D.L. Turner, and P.S. Reynolds. 2000. *Wilderness Recreation Use Estimation: A Handbook of Methods and Systems*. General Technical Report RMRS-GTR-56. Ogden, Utah: U.S. Department of Agriculture-Forest Service, Rocky Mountain Research Station.
- Westmoreland, D., and L.B. Best. 1985. The effect of disturbance on mourning dove nesting success. *Auk* 102, 774-780.
- Weins, J.A. 1986. Spatial scale and temporal variation in studies of shrubsteppe birds. In *Community Ecology*. J. Diamond and T. J. Case, eds. New York: Harper and Row, 154-172.
- White, C.M., and T.L. Thurow. 1985. Reproduction of ferruginous hawks exposed to controlled disturbance. *Condor* 87, 14-22.
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Jomsky, Mark

From: Leeona Klippstein [leeona@earthlink.net]
Sent: Sunday, January 31, 2010 7:08 PM
To: Tornek, Terry; Bogaard, Bill; Gordo, Victor; Madison, Steve; Haderlein, Steve; Robinson, Jonathan (ITSD); McAustin, Margaret; McIntyre, Jacqueline; Holden, Chris
Cc: Fuentes, Theresa; Laveaga, Rosa; Jomsky, Mark; Craig Sherman; gaboony@sbcglobal.net; Mary E Barrie; Hugh Bowles; Beck, Michael; Marietta
Subject: Public Comments on Agenda Item #6 for 2/1/10 (2)
Attachments: InterScience Journal Quiet Recreation.pdf; taylor+and+knight+2003+wildlife+response[1].pdf; Where have all the songbirds gone Wildlands CPR.docx



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journal Quiet Rec.it+2003+wildlif.:he songbirds g...

From Spirit of the Sage Council for Agenda Item #6,
for submission to the City Council - Public Comment on 2/1/10 , or thereafter. The
comment letter is includes 15 attachments that will follow in groups of 3 in 5 emails.
This is group 2.

If you are unable to retrieve the attachments, please contact me to resend.

Thank you

Leeona Klippstein, Executive Director
Spirit of the Sage Council
(626) 676-4116

Quiet, Nonconsumptive Recreation Reduces Protected Area Effectiveness

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Keywords

Carnivores; human disturbance; noninvasive surveys; oak woodlands; outdoor recreation; park management; protected area planning.

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Received: 28 January 2008; accepted 22 May 2008

doi: 10.1111/j.1755-263X.2008.00019.x

Abstract

Protected areas around the world were created with the goals of preserving biodiversity and providing nature-based recreation opportunities for millions of people. This dual mandate guides the management of the majority of the world's protected areas, but there is growing evidence that quiet, nonconsumptive recreation may not be compatible with biodiversity protection. We combined noninvasive survey techniques and DNA verification of species identifications to survey for mammalian carnivores in 28 parks and preserves in northern California. Paired comparisons of neighboring protected areas with and without recreation revealed that the presence of dispersed, nonmotorized recreation led to a five-fold decline in the density of native carnivores and a substantial shift in community composition from native to nonnative species. Demand for recreation and nature-based tourism is forecasted to grow dramatically around the world, and our findings suggest a pressing need for new approaches to the designation and management of protected areas.

Introduction

Every day, millions of people use the world's protected areas for the recreation, education, and tourism opportunities that they provide. In the United States, for example, the number of people who participated in day hiking increased by nearly 800% between 1960 and 2000 (Figure 1). The majority of global protected areas permit public access (IUCN Categories Ib-VI; IUCN 1994), and key reserve networks, including national park systems in Europe, North America, and Australia, operate under a dual mandate to provide recreational opportunities while conserving natural resources. Although many researchers have noted the harmful impacts of motorized recreation and extractive land uses on the conservation effectiveness of protected areas (for example, Liu *et al.* 2001), "quiet," nonconsumptive activities, such as hiking and wildlife viewing, are widely assumed to be benign uses. The demand for nature-based tourism is forecasted to grow dramatically in urban regions (Cordell *et al.* 2005), as well as in global biodiversity hotspots (Christ *et al.* 2003), and quantitative information is needed to

understand the trade-offs between public use and species protection.

Recreation is an important issue for ecologists and conservation planners to consider, because access for recreation is a key component of plans to generate public support and revenue for land conservation. Public parks and open space preserves are the primary places that most people access nature, and contact with nature has a range of human health benefits (Frumkin 2001). Ecologists have identified recreation as an ecosystem service supporting human populations (Chan *et al.* 2006), and similarly, recreational opportunities are valued by economists as natural resource amenities driving economic growth and residential development patterns (Hansen *et al.* 2002). Outdoor recreation enthusiasts are vocal advocates for land conservation (for example, TNC 2005), and public access is an important platform for generating tax and bond revenue for protected area acquisition.

However, recreation may not always be compatible with the conservation objectives of land protection. Recreation is the second leading cause of endangerment

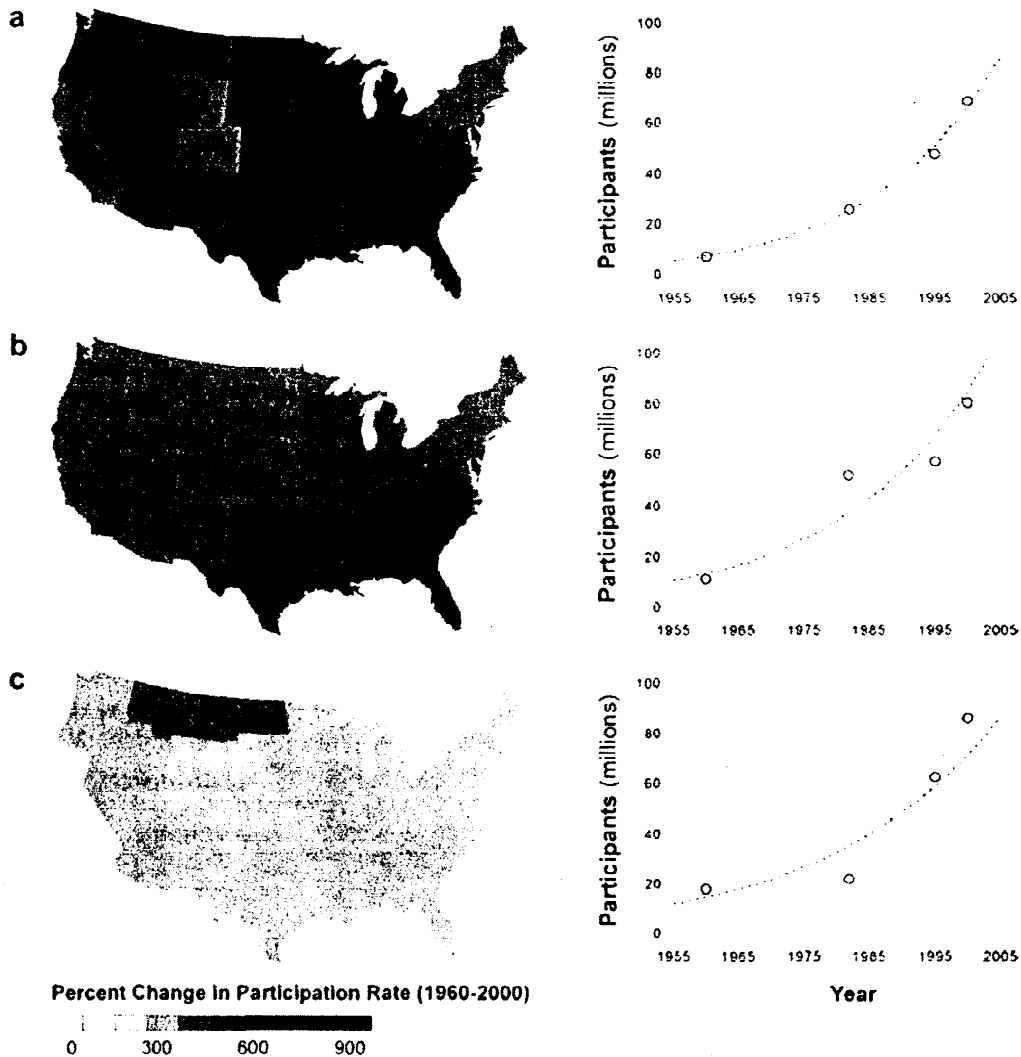


Figure 1 Change in the rate and total number of U.S. citizens participating in three quiet, nonconsumptive recreational activities from 1960–2000. Geographic regions, participation rates, and numbers of participants in (a) day hiking, (b) bicycling, and (c) wildlife viewing are derived from the National Surveys on Recreation and the Environment (NSRE) conducted in 1960, 1982, 1995, and 2000

(<http://www.srs.fs.usda.gov/trends/nrse/nrse2.html>). NSRE surveys in 1960 and 1982 included individuals 12 years and older, whereas surveys in 1995 and 2000 included individuals 16 years and older. Dashed lines represent the best-fit exponential curves for changes in the number of participants over time.

to species occurring on U.S. federal lands (Losos *et al.* 1995), and there is growing evidence that nonmotorized activities have negative impacts on a wide range of wildlife species (Knight & Gutzwiller 1995). For example, recreational activity correlates with decreases in species abundances and activity levels (Garber & Burger 1995), causes wildlife to flee (Papouchis *et al.* 2001) or avoid otherwise suitable habitat (Taylor & Knight 2003), and alters species composition and behavior (Ikuta & Blumstein 2003).

Few studies have examined recreation impacts in multiple parks or preserves (for example, Forrest & St. Clair

2006) or made comparisons between sites that do and do not permit recreation (for example, Cole 1995). In addition, the impacts of nonconsumptive recreation on mammalian carnivores are rarely investigated (for example, Nevin & Gilbert 2005). To understand how recreation impacts wildlife populations at the scale of resource management decisions, we need to examine recreation as a landscape-scale human disturbance process affecting whole species communities and ecosystems.

We surveyed the composition and density of mammalian carnivores to evaluate how biodiversity in protected areas was affected by the presence of quiet,

nonconsumptive recreation. Here, we define quiet, nonconsumptive recreation to include dispersed, nonmotorized activities such as hiking, biking, and horseback riding. Wide-ranging and low-density carnivores are sensitive to human disturbance in fragmented landscapes (Riley *et al.* 2003), and changes in carnivore composition and abundance can have cascading effects on prey species and vegetation communities (Crooks & Soulé 1999). In addition, research on habitat fragmentation has shown that variability in carnivore species' responses can be useful for identifying thresholds of human disturbance (Crooks 2002).

To minimize variation in habitat quality and landscape context among study sites, which could confound our ability to detect the impacts of recreation, we made paired comparisons of protected areas with recreation and nearby protected areas without recreation. We conducted transect searches for scats to maximize detections of a suite of carnivore species (Reed & Leslie 2005). Because visual identifications of sympatric carnivore scats can be highly unreliable (Fernandez *et al.* 1997), we developed molecular genetic methods to confirm species identifications (Bidlack *et al.* 2007).

Methods

We used a paired-site design to investigate how the presence of quiet, nonconsumptive recreation affects mammalian carnivore communities in 28 protected areas in Marin, Sonoma, and Napa Counties in northern California (122° 12' to 122° 51' W, 38° 0' to 38° 37' N; Figure 2). This region has a Mediterranean climate and is dominated by mixed oak woodlands. Over 1755 km² (23.3%) of land in the study area is under some form of protection. Nearly 60% of the protected land area is open to public access, 12.6% permits restricted access, and 27.4% is closed to the public (BAOSC 2004). The study area includes 25 incorporated cities and towns, and these protected areas are popular recreation destinations for the more than seven million residents of the greater San Francisco Bay Area. There is growing pressure on government agencies to purchase additional land for recreation and to expand public access in existing protected areas (Wells 2000).

We first identified 14 parks and open space preserves that permitted public access for quiet, nonconsumptive recreational activities. We then used a spatial database of protected lands for the study region (BAOSC 2004) to identify 14 nearby (< 5 km) protected areas that did not permit recreation. Protected areas closed to recreation included public- and privately-owned biological preserves ($n = 1$ and 3, respectively) and private ranches with conservation easements ($n = 10$). Seven of these

sites had private residences, three permitted limited access for research and educational activities, and two had narrow easements for regional trails along portions of their perimeters. The light and infrequent activities on these sites strongly contrasted with the regular and intense visitation to the public recreation areas.

We defined protected area perimeters according to the sites' administrative boundaries. Several sites were contiguous with other protected areas, but we did not include adjacent reserves in our calculations unless they were managed by the same individual or agency and permitted the same range of uses. Some protected areas were open to grazing by cattle and horses, including those that did ($n = 3$) and did not permit recreation ($n = 7$).

Pairs of protected areas were selected to be as similar in size, vegetation cover and adjacent land uses as possible (Table 1). We used ArcGIS 9.1 (ESRI, Redlands, CA, USA) to calculate site and landscape characteristics of the selected sites, and we used a paired-sample *t*-test (Zar 1999) to compare protected areas with and without recreation. Paired sites were located a mean of 1.8 km (range: 0–5.3 km) apart. The mean area of sites that permitted recreation was greater than the mean area of sites that did not permit recreation, but there was no evidence for a difference between paired sites ($P = 0.49$). On average, sites without recreation were 79 m higher in elevation ($P = 0.0012$), but there was no evidence for a difference in slope ($P = 0.93$). All protected areas were located in oak woodland habitat, and sites with recreation had an average of 9.6% more hardwood forest cover ($P = 0.061$). Pairs of sites were located a similarly close to roads ($P = 0.89$), and the density of development was greater adjacent to protected areas that permitted recreation ($P = 0.10$). While these comparisons revealed some differences in protected area characteristics, the differences between paired sites were small relative to the total range of variability in the study system (Table 1), and the paired-site design represents our best effort to isolate the effects of recreation from other factors affecting carnivore distributions.

Our research focused on six common species: native coyotes (*Canis latrans*), bobcats (*Lynx rufus*), and gray foxes (*Urocyon cinereoargenteus*), and nonnative red foxes (*Vulpes vulpes*), domestic dogs (*Canis familiaris*), and domestic cats (*Felis catus*). We conducted transect searches for scats to maximize detections of multiple carnivores (Reed & Leslie 2005) and to provide an index of species' densities (Harrison *et al.* 2004). We surveyed the study sites between June and September 2005. We visited each site once, and we visited paired protected areas within 24 hours of one another to minimize possible sources of temporal variation (Sanchez *et al.* 2004). We searched eight 500-m line transects in protected areas with

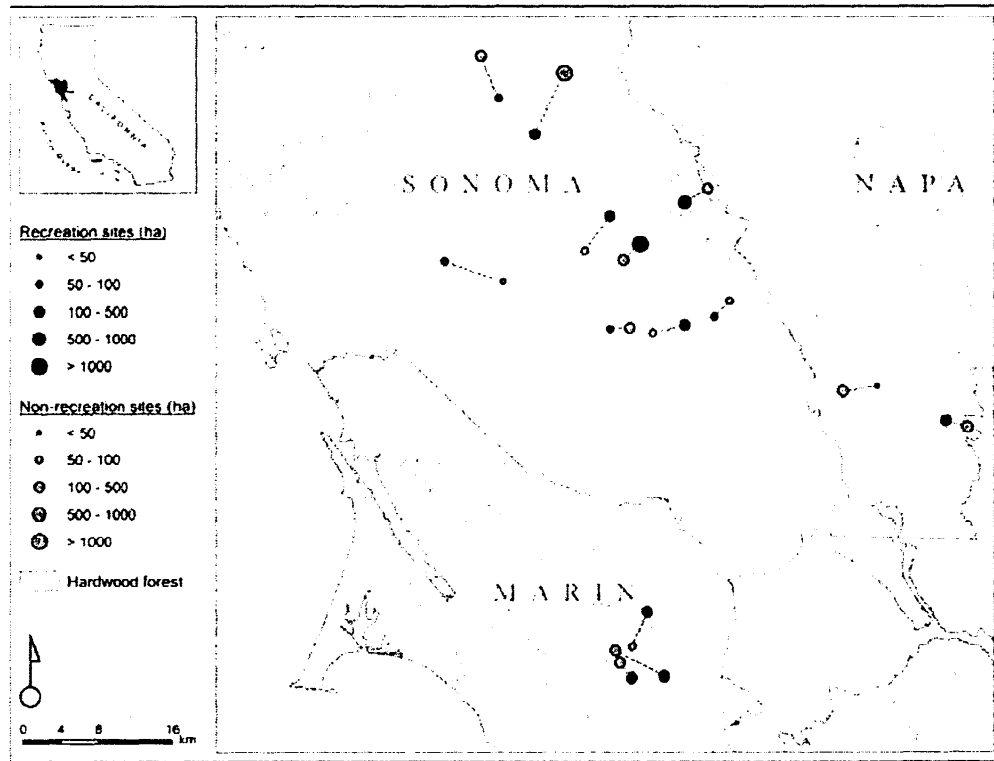


Figure 2 Locations of 14 pairs of protected areas with and without quiet, nonconsumptive recreation in northern California. To protect the privacy of landowners, only the center points of sites, their relative areas, and lines connecting paired sites are shown.

Table 1 Comparison of six site and landscape characteristics (mean \pm s.d.) for protected areas with ($n = 14$) and without recreation ($n = 14$). The mean difference and probability of a Type I error (P) of paired comparisons are given for each variable, as well as the range of values throughout the study area.

Comparison	Study area range	Site type		Mean difference	P
		Recreation	No recreation		
Area (ha)	0–2694.0	363.3 \pm 491.7	254.5 \pm 300.7	108.9	0.491
Elevation (m)	0–832.0	183.0 \pm 134.6	261.5 \pm 164.6	–78.6	0.001
Slope ($^{\circ}$)	0–60.61	13.46 \pm 6.39	13.54 \pm 5.13	–0.09	0.933
Hardwood cover (%)	0–100	51.01 \pm 29.26	41.39 \pm 26.00	9.61	0.061
Distance to roads (m)	0–9486.8	408.5 \pm 303.0	422.2 \pm 257.7	–13.7	0.887
Development density within 500 m (parcels/km ²)	0.02–1940.62	7.54 \pm 10.60	2.27 \pm 1.90	5.28	0.102

recreation and four 500-m line transects in protected areas without recreation. To investigate how our observations were influenced by the locations of trails or land uses adjacent to protected areas, we stratified the transect locations on- and off-trail in the recreation areas and between the edges and interiors of all sites.

We collected and recorded the GPS point location of each probable mammalian carnivore scat detected during the transect searches. Because the ground cover in oak woodlands is relatively open, we estimate that we were

able to detect scats within approximately 2 m of the transect search line. We stored each scat in a paper bag with a clay desiccant packet (Texas Technologies, Cedar Park, TX, USA). We also recorded the GPS point location for all domestic dog scats detected during the transect searches.

We developed molecular genetic methods to confirm species identifications for the collected scats (Bidlack *et al.* 2007) because visual identifications of scats from closely related species can be highly unreliable (Fernandez *et al.* 1997). We extracted and amplified DNA from collected

scats between October 2005 and May 2006. We took two subsamples (approximately 500 mg) of each scat within 3 d of collection and stored them in a -80°C freezer. We extracted DNA using Qiagen QIAamp DNA Stool extraction kits (Qiagen, Inc., Valencia, CA, USA) according to the manufacturer's instructions and stored extracted DNA in a -80°C freezer.

We performed PCR amplification of DNA using Qiagen Taq PCR Master Mix kits (Qiagen, Inc.). We used HCarn200 (Bidlack *et al.* 2007) and CanidL1 (Paxinos *et al.* 1997) primers to amplify the first 196 bp of the mitochondrial cytochrome b gene. Each 20 μl PCR reaction contained 10 μl Qiagen Taq PCR Master Mix, 1 μl 10 μM HCarn200 primer, 1 μl 10 μM CanidL1 primer, 6 μl deionized H_2O , and 2 μl diluted (1:50) DNA template. Thermal cycling was initiated at 94°C for 2 minutes, followed by 40 cycles of 94°C for 1 minute, 54°C for 1 minute, and 72°C for 2 minutes. All PCR reactions included at least one negative control to monitor for contamination, and we used electrophoresis to check each reaction for successful amplification. We repeated DNA amplification for all samples that failed to amplify in the first PCR reaction, and when necessary, we used additional subsamples to ensure a minimum sample size of 75% of the scats collected in each site.

We used restriction fragment length polymorphisms (RFLP) to identify amplified DNA fragments to species. We first digested PCR products with Hpa II (New England Biolabs, Ipswich, MA, USA) to separate canids from felids. Hpa II does not cut fragments from any of the three canid species (coyote, gray fox, and red fox) but cuts fragments from both felid species (bobcat and domestic cat) at 140 bp. We then digested samples identified as canid with HpyCH4 V (New England Biolabs). HpyCH4 V does not cut fragments from coyote, but cuts gray fox at 67 and 85 bp and red fox at 136 bp. We digested samples identified as felid with Bsl I (New England Biolabs). Bsl I does not cut fragments from bobcat, but cuts domestic cat at 150 bp.

Each 10 μl digest reaction contained 3.75 μl deionized H_2O , 1 μl digest buffer, 0.25 μl restriction enzyme, and 5 μl PCR product. Reactions were incubated for 4–6 hours, according to manufacturer's instructions. We used electrophoresis to separate the products for 40 minutes on a 1.7% agarose gel and visualized the predicted cutting patterns using ethidium bromide and UV light. Failed or ambiguous digests were repeated, and digests that failed twice were excluded from further analysis.

All statistical analyses were performed using JMP 6.0 (SAS Institute, Cary, NC, USA). We used log-likelihood ratio tests (G-test; Zar 1999) to compare how frequently we detected each species in protected areas with and without recreation. We used paired-sample t-tests to

compare native and nonnative species diversity and species densities between protected areas with and without recreation. Species densities were calculated as the number of scats detected divided by the length of transects searched (Harrison *et al.* 2004). We approximated the total scat densities along each transect by extrapolating the proportions of species detected in each site to the samples that we were unable to identify in the laboratory. For example, in a site where laboratory identifications were evenly divided between coyotes and bobcats, we assumed that half of the unknown scats were from coyotes and half from bobcats. We verified that extrapolating the species origin of unknown scats did not influence the results of our analysis by repeating all of the density comparisons including only those scat samples that were successfully identified in the laboratory. Paired-sample t-tests were also used to compare species densities between transects located on- and off-trail in the recreation sites, and species densities between the edges and interiors of all sites. Lastly, we used nonparametric Wilcoxon rank-sum tests to confirm the results of all paired comparisons, but statistical results are only reported for the parametric tests.

Results

The presence of quiet, nonconsumptive recreation correlated with a substantial shift in the composition of the carnivore community in California protected areas. A greater mean number of native species was detected in protected areas that did not permit recreation (Figure 3) ($P=0.0011$) and bobcats in particular were

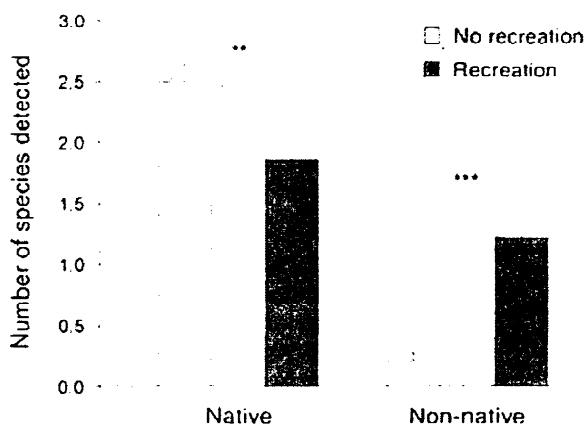


Figure 3 Native and nonnative species diversity in protected areas with and without recreation. Mean numbers of species detected and standard errors are given for each type of site. Two asterisks (**) indicate a mean difference between paired sites with Type I error of $P < 0.01$, and three asterisks (***) indicate a difference with $P < 0.001$.

detected more frequently in protected areas without recreation ($P = 0.013$). On the other hand, more nonnative species were detected in protected areas that permitted recreation (Figure 3) ($P < 0.001$), and domestic dogs were detected more frequently in the recreation areas ($P < 0.001$).

Densities of coyotes and bobcats were more than five times lower in protected areas that permitted recreation (Figure 4) ($P < 0.001$ and $P = 0.0029$, respectively), and we observed declines in density for both species between all 14 pairs of protected areas. Domestic dogs were not detected in protected areas without recreation, but we detected substantial densities (7.69 ± 2.57 scats km^{-1}) of dogs in the recreation areas (Figure 4) ($P = 0.0052$). We did not find evidence of any effects of trail location or protected area edge on the distributions of native carnivores. With the exception of domestic dogs, there was no evidence for differences in species' densities between transects located on- or off-trail or between transects located at the edges or interiors of the protected areas (Table 2).

Discussion

The results of our carnivore surveys indicate that quiet, nonconsumptive recreation has a consistent and site-level impact on the distribution and densities of native carnivore species, and consequently, the effectiveness of protected areas for biodiversity conservation. Protected areas with recreation had more nonnative carnivores and dramatically lower densities of native species. We describe the effect of recreation as consistent, because we observed declines in native carnivore densities between all 14 pairs of protected areas, even those that were directly adjacent to one another. In addition, we suggest that the effect of recreation functions at the site level, because we did not observe effects of protected area edge or the locations of trails for any species except domestic dogs. The configuration of recreational trails may be important for determining recreation impacts in larger landscapes with more dispersed activities (for example, Taylor & Knight 2003). However, for moderately sized protected areas (50–2000 ha) near urban development, the key variable seems to be whether or not the site is open to public access.

Our paired-site study design helped us to isolate the effects of recreation from other sources of variation affecting carnivore distributions, including regional geographic variation, landscape context, and habitat characteristics. In addition, transect searches for scats, paired with DNA



Figure 4 Densities of (a) coyotes, (b) bobcats, and (c) domestic dogs in protected areas with and without recreation. Mean numbers of scats detected per kilometer of transect surveyed and standard errors are given for each type of site. Two asterisks (**) indicate a mean difference between paired sites with Type I error of $P < 0.01$, and three asterisks (***) indicate a difference with $P < 0.001$.

Table 2 Distribution of carnivore detections within protected areas. Densities (mean \pm s.d.) of all species detected on transects at the edges versus the interiors of all sites, and on- versus off-trail in sites that permitted recreation. Paired comparisons with reasonable evidence of a mean differences (Type I error approaching 0) are indicated with bold type

Site type	Transect location	Mean scat density (scats km ⁻¹)					
		Coyote	Bobcat	Gray fox	Red fox	Dom. cat	Dom. dog
No recreation	Edge	8.72 \pm 4.71	5.27 \pm 4.16	0.73 \pm 1.52	0.23 \pm 0.58	0.30 \pm 1.12	0
	Interior	7.75 \pm 5.14	7.92 \pm 12.22	0.21 \pm 0.52	0.32 \pm 0.90	0	0
Recreation	Edge	1.38 \pm 1.40	1.09 \pm 1.79	0.30 \pm 0.64	0	0.15 \pm 0.31	12.49 \pm 15.51
	Interior	1.57 \pm 1.72	1.23 \pm 1.50	0.25 \pm 0.92	0.03 \pm 0.13	0.28 \pm 0.77	3.24 \pm 5.73
	On-trail	1.78 \pm 1.90	1.23 \pm 1.79	0.28 \pm 0.74	0	0.17 \pm 0.48	11.53 \pm 14.75
	Off-trail	1.13 \pm 1.70	1.10 \pm 1.31	0.22 \pm 0.67	0.03 \pm 0.11	0.31 \pm 0.68	1.73 \pm 2.15

verification of species identifications, provided an efficient and accurate method for assessing the impacts of recreation in a large number of sites at a landscape scale. The detectability of scats likely varied between on- and off-trail transects, but it is not clear how much this variability affected the results. Although scats may have been obscured by vegetation along off-trail transects, scats also may have been crushed or otherwise removed from busy recreational trails. Regardless, there is no evidence to suggest that within recreation sites, native carnivores avoided recreational trails. This result is consistent with other studies that have found that carnivores often select low-traffic roads and trails as travel corridors (Whittington *et al.* 2005).

Declines in native carnivores and introductions of non-native species can alter the trophic structure of ecosystems and lead to unsustainable predation pressure on native birds and small mammals (Crooks & Soulé 1999). Two of the three nonnative carnivores that we detected in the recreation areas are strongly human-commensal species: domestic cats and domestic dogs. Cats and dogs are introduced to protected areas by people in a variety of ways: they accompany humans as companion pets, they are allowed to roam from nearby homes, or in the case of cats, they are managed in feral colonies (Castillo & Clarke 2003). We detected domestic dogs more frequently and in much greater densities in the recreation areas. Domestic dogs are often a particular focus of protected area management policy, due to concerns about their impacts on resources as well as conflicts among user groups (Miller *et al.* 2001). Many public agencies exclude dogs from recreation areas or require dogs to be on leash (Forrest & St. Clair 2006), and an investigation of how mammalian carnivores respond to these different dog management policies is underway.

The design of our study did not address the mechanisms of human disturbance affecting carnivores in recreation areas; however, prior researchers have documented

various behavioral responses of wildlife species to recreational disturbances, including flight (Papouchis *et al.* 2001), avoidance (Taylor & Knight 2003), and reduction in habitat use (Fairbanks & Tullous 2002). Our analysis extends the results of these behavioral studies to characterize recreational disturbance to wildlife at a landscape scale, and the native carnivore declines that we observed provide us with an estimate of the cost, in terms of biodiversity and habitat suitability, of opening protected areas to public access.

Certainly, access for outdoor recreation will continue to be an important component of plans to generate public support and revenue for land conservation (for example, Wells 2000). When protected areas are designated for biodiversity conservation, development of nature-based tourism can yield economic benefits for local communities (Eagles *et al.* 2002) and recreation areas provide health and ecosystem services for human populations (Frumkin 2001; Chan *et al.* 2006). On the other hand, given the biodiversity crises we are facing around the world, public access needs to be balanced with the protection of native species and ecosystems.

Recent evidence indicates that participation in nature-based recreation may be declining (Pergams & Zaradic 2008). Our study focused on recreational activity in local parks, which has not necessarily declined in the same manner as visitation to national-level public lands, and may be increasing (for example, OSMP 2005). In fact, pressures on protected areas near urban centers could be even greater due to increasing oil costs and a declining economy, which may limit visitation to more distant parks.

A variety of management strategies have been proposed to minimize the impacts of recreation on wildlife, such as limiting the number of visitors via a permit system (Garber & Burger 1995), restricting public access to certain times of the year (Klein *et al.* 1995), or closing a portion of a protected area to recreation and setting it aside as

a biological preserve (Ikuta & Blumstein 2003). However, recreation impacts vary nonlinearly with use in a variety of ecosystems (for example, Cole 1986), such that a small number of visitors can have a disproportionate impact on sensitive species. In addition, many public agencies have limited resources for monitoring recreational use and enforcing compliance with management policies (Forrest & St. Clair 2006). These limitations suggest that it may be more effective to allocate recreational uses and conservation targets among different sites, and this approach will require a diverse suite of land conservation strategies.

Private lands play an important role in biodiversity protection, in part because private properties frequently occupy lower-elevation, higher-productivity lands than public protected areas (Hansen *et al.* 2002; Maestas *et al.* 2003). Our paired comparisons in hardwood rangelands indicate that a further advantage of private reserves is the absence of human recreational use, and these results provide strong support for conservation strategies that incorporate private lands. For example, conservation easements, which generally limit public access (Rissman *et al.* 2007), may be particularly valuable for protecting biodiversity in areas with high demand for recreation. Ultimately, these considerations should be incorporated into the design of reserve networks. Conservation planning should take into account not only the spatial distribution of species, but also the demand for recreational use and other human activities, and the compatibility of those activities with long-term conservation objectives.

Acknowledgments

We are grateful to the Audubon Canyon Ranch, California Academy of Sciences, California Department of Fish and Game, California State Parks, Marin Agricultural Land Trust, Marin County Open Space District, Napa City Parks, Napa County Parks, Napa Land Trust, Sonoma County Agricultural Preservation and Open Space District, Sonoma County Regional Parks, Sonoma Land Trust, Sonoma State University, and numerous private landowners for permission to survey their properties. The Hopland Research and Extension Center provided equipment and logistical support for field surveys, and the laboratory of P. J. Palsbøll provided equipment and guidance for genetic analyses. We thank J. S. Brashares, D. A. Newburn, R. L. Pressey, D. M. Theobald, and two anonymous reviewers for helpful comments, which improved this manuscript. S.E.R. was supported by a National Science Foundation Graduate Research Fellowship, Sigma Xi Grant-In-Aid-of-Research, Phi Beta Kappa Doctoral Fellowship, Budweiser Conservation Scholarship,

Switzer Environmental Fellowship and the Department of Environmental Science, Policy and Management.

References

- Bay Area Open Space Council (BAOSC) (2004) *Bay Area Protected Lands Database [Shapefile]*. Available from <http://openspacecouncil.org/projects/bapldb>. Accessed 2004.
- Bidlack, A.L., Reed S.E., Palsbøll P.J., Getz W.M. (2007) Characterization of a western North American carnivore community using PCR-RFLP of cytochrome b obtained from fecal samples. *Conserv Genet* **8**, 1511–1513.
- Castillo, D., Clarke A.L. (2003) Trap/neuter/release methods ineffective in controlling domestic cat “colonies” on public lands. *Nat Area J* **23**, 247–253.
- Chan, K.M.A., Shaw R., Cameron D.R., Underwood E.C., Daily G.C. (2006) Conservation planning for ecosystem services. *PLOS Biol* **4**, 2138–2152.
- Christ, C., Hillel O., Matus S., Sweeting J. (2003) *Tourism and biodiversity: mapping tourism's global footprint*. Conservation International, Washington, D.C.
- City of Boulder Open Space and Mountain Parks (OSMP) (2005) *Visitor master plan*. Available from <http://www.ci.boulder.co.us/files/openspace/pdf.VMP/Final-VMP.pdf>. Accessed 4 April 2008.
- Cole, D.N. (1986) Recreational impacts on backcountry campsites in Grand Canyon National Park, Arizona, USA. *Environ Manag* **10**, 651–659.
- Cole, D.N. (1995) Experimental trampling of vegetation I: relationship between trampling intensity and vegetation response. *J Appl Ecol* **32**, 203–214.
- Cordell, H.K., Green G.T., Leeworthy V.R., Stephens R., Fly M.J., Betz C.J. (2005) United States of America: outdoor recreation. Pages 245–264 in G. Cushman, A.J. Veal, J. Zuzanek, editors. *Free time and leisure participation: international perspectives*. CABI Publishing, Wallingford, U.K.
- Crooks, K.R. (2002) Relative sensitivities of mammalian carnivores to habitat fragmentation. *Conserv Biol* **16**, 488–502.
- Crooks, K.R., Soulé M.E. (1999) Mesopredator release and avifaunal extinctions in a fragmented system. *Nature* **400**, 563–566.
- Eagles, P.F.J., McCool S.F., Haynes C.D. (2002) *Sustainable tourism in protected areas: guidelines for planning and management*. IUCN, Gland and Cambridge, United Kingdom.
- Fairbanks, W.S., Tullous R. (2002) Distribution of pronghorn (*Antilocarpa americana* ord) on Antelope Island State Park, Utah, USA, before and after establishment of recreational trails. *Nat Area J* **22**, 277–282.
- Fernandez, G.J., Corley J.C., Capurro A.F. (1997) Identification of cougar and jaguar feces through bile acid chromatography. *J Wildlife Manage* **61**, 506–510.
- Forrest, A., St. Clair C.C. (2006) Effects of dog leash laws and habitat type on avian and small mammal communities in urban parks. *Urban Ecos* **9**, 51–66.

- Frumkin, H. (2001) Beyond toxicity: human health and the natural environment. *Am J Prev Med* **20**, 234–240.
- Garber, S.D., Burger J. (1995) A 20-yr study documenting the relationship between turtle decline and human recreation. *Ecol Appl* **5**, 1151–1162.
- Hansen, A.J., Rasker R., Maxwell B. et al. (2002) Ecological causes and consequences of demographic change in the New West. *BioScience* **52**, 151–162.
- Harrison R.L., Clarke P.S., Clarke C.M. (2004) Indexing swift fox populations in New Mexico using scats. *Am Midl Nat* **151**, 42–49.
- Ikuta, L.A., Blumstein D.T. (2003) Do fences protect birds from human disturbance? *Biol Conserv* **112**, 447–452.
- Klein, M.L., Humphrey S.R., Percival H.F. (1995) Effects of ecotourism on distribution of waterbirds in a wildlife refuge. *Conserv Biol* **9**, 1454–1465.
- Knight, R.L., Gutzwiller K.J. (1995) *Wildlife and recreationists: coexistence through management and research*. Island Press, Washington, D.C.
- Liu, J., Linderman M., Ouyang Z., An L., Yang J., Zhang H. (2001) Ecological degradation in protected areas: the case of Wolong Nature Reserve for giant pandas. *Science* **292**, 98–101.
- Losos, E., Hayes J., Phillips A., Wilcove D., Alkire C. (1995) Taxpayer-subsidized resource extraction harms species. *BioScience* **45**, 446–455.
- Maestas, J.D., Knight R.L., Gilgert W.C. (2003) Biodiversity across a rural land-use gradient. *Conserv Biol* **17**, 1425–1434.
- Miller, S.G., Knight R.L., Miller C.K. (2001) Wildlife responses to pedestrians and dogs. *Wildlife Soc Bull* **29**, 124–132.
- Nevin, O.T., Gilbert B.K. (2005) Perceived risk, displacement and refuging in brown bears: positive impacts of ecotourism? *Biol Conserv* **121**, 611–622.
- Papouchis, C.M., Singer F.J., Sloan W.B. (2001) Responses of desert bighorn sheep to increased human recreation. *J Wildlife Manage* **65**, 573–582.
- Paxinos, E., McIntosh C., Ralls K., Fleischer R. (1997) A noninvasive method for distinguishing among canid species: amplification and enzyme restriction of DNA from dung. *Mol Ecol* **6**, 483–486.
- Pergams, O.R.W., Zaradic P.A. (2008) Evidence for a fundamental and pervasive shift away from nature-based recreation. *Proc Roy Acad Sci* **105**, 2295–2300.
- Reed, S.E., Leslie E.F. (2005) Patterns of carnivore co-occurrence on the North Rim, Grand Canyon National Park. Pages 309–316 in C. van Riper, D.J. Mattson, editors. *The Colorado Plateau II: biophysical, socioeconomic and cultural research*. University of Arizona Press, Tucson.
- Riley, S.P.D., Sauvajot R.M., Fuller T.K. et al. (2003) Effects of urbanization and habitat fragmentation on bobcats and coyotes in southern California. *Conserv Biol* **17**, 566–576.
- Rissman, A.R., Comendant T., Lozier L. et al. (2007) Conservation easements: private use and biodiversity protection. *Conserv Biol* **21**, 709–718.
- Sanchez, D.M., Krausman P.R., Livingston T.R., Gipson P.S. (2004) Persistence of carnivore scat in the Sonoran Desert. *Wildlife Soc B* **32**, 366–372.
- Taylor, A.R., Knight R.L. (2003) Wildlife responses to recreation and associated visitor perceptions. *Ecol Appl* **13**, 951–963.
- The Nature Conservancy (TNC) (2005) Outdoor recreation and conservation groups urge congress to preserve vital conservation tax incentive tool [press release]. Available from <http://www.nature.org/pressroom/press/press1851.html>. Accessed 18 January 2008.
- Wells, J. (2000) *Greenbelt gaining ground in Sonoma County* [news story]. Available from <http://www.sfgate.com/cgi-bin/article.cgi?file=/chronicle/archive/2000/09/28/MN9975.DTL>. Accessed 18 January 2008.
- Whittington, J., St. Clair C.C., Mercer G. (2005) Spatial responses of wolves to roads and trails in mountain valleys. *Ecol Appl* **15**, 543–553.
- The World Conservation Union (IUCN). (1994) *Guideline for protected area management categories*. IUCN, Gland, Switzerland and Cambridge, United Kingdom.
- Zar, J.H. (1999) *Biostatistical analysis*. 4th edn. Prentice Hall, Upper Saddle River, New Jersey.

Editor: Richard Krannich