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September 25, 2007

Jim Bartel
United States Fish and Wildlife Service
Carlsbad Field Office
6010 Hidden Valley Road
Carlsbad, CA 92011

Email address: fw8cfwocomments@fws.gov

Re: *Comments on Proposed Critical Habitat Designation for Peirson's Milk-vetch* (RIN 1018-AUG98)

Dear Mr. Bartel:

This firm represents the American Sand Association ("ASA"), a non-profit corporation dedicated to enhancing safe and ecologically responsible recreation in the Imperial Sand Dunes Recreation Area ("ISDRA"). Over the last six years, the ASA has been deeply involved in the planning issues at the ISDRA, including those that have resulted from, or been driven by, litigation. We recognize that the proposed designation of critical habitat for the Peirson's Milk-vetch ("PMV"), issued on July 27, 2007, is in response to an order issued by Judge Susan Illston of the United States District Court for the Northern District of California. The ASA commends the Fish and Wildlife Service (the "Service") for its efforts to address the defects identified by Judge Illston in the Critical Habitat Designation ("CHD") issued in 2004. Set forth below are the ASA's comments on the recently-proposed CHD for the PMV. These include comments on the Economic Impact Analysis ("EIA") prepared by Industrial Economics, which purports to assess the effects the proposed CHD will have on local and regional businesses.

A. Comments on the Critical Habitat Designation

At the outset, the ASA considers the proposed CHD a vast improvement over the 2003 Draft of proposed critical habitat for the PMV. In the 2007 version, it is clear that the Service let scientific evidence dictate the analysis and the habitat designation itself. This is the correct response to the tremendous amount of PMV population and seed bank data that has been

developed since 1998. By relying on sound technical information, much of it gathered over years of consistent study, the Service was able to refine the proposed CHD so that it addresses the vast majority of PMV plants and habitat. We would hope that this highly data-driven approach becomes a template for future CHD decisions elsewhere in the country. It adds integrity to a process which in the past has seemed no more than an arbitrary drawing of lines.

We have reviewed the Service's methodology and criteria for delineating the proposed critical habitat, and we have discussed it with the ASA's biological consultant, Dr. Art Phillips, who has conducted many studies of the PMV since 2001. Based on this review, the ASA believes the Service's methodology to be sound and the criteria appropriate given the non-random distribution pattern of the PMV. In particular, the "occupied cells" (as defined in on page 41265 of the proposed designation), generally correspond, in both size and location, with the PMV cells observed and noted in Dr. Phillips' reports. In layman's terms, this means that there is fairly specific agreement as to where most of the plants reside, drop seed, and germinate. Thus, when the proposed CHD states that the methodology employed by the Service "captured approximately 92% of the 2005 observed population [of PMV] and includes habitat we believe contain high density core populations, a large extent of high quality habitat, and a large seed bank," we have every confidence that the assertion is true. For this reason, we agree that the 16,106 acres contained in the proposed CHD is more than adequate to protect the PMV and ensure its "recovery".*

In support of this position, the ASA would point out that the BLM has for many years allowed camping and motorized recreation activities on many of the 16,106 acres identified in the proposed CHD, yet the PMV habitat in these areas remains in excellent condition and supports large numbers of plants and a sizeable seed bank. This fact confirms conclusions drawn in a host of BLM studies conducted since 1998 – namely, that recreational use patterns, including vehicle travel routes, do not intersect or otherwise intrude into prime PMV habitat. The data also suggest that past and current recreational activities do not frustrate the mechanics of PMV pollination. To the extent that the PMV relies on white-faced digger bees *(Habropoda pallida)* to facilitate the pollination process, recreational use does not appear to affect that process negatively. We bring these facts to your attention as they tend to rebut statements, attributed to Mr. Bartel, in the EIA prepared by Industrial Economics. Specifically, the EIA quotes Mr. Bartel as saying that significant OHV use in the proposed CHD areas "would appear to be incompatible with long-term PMV [milk-vetch] habitat recovery and conservation." (EIA, at p. 3-3, ¶58) As stated above, many of the areas contained within the 16,106-acre CHD have

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* The ASA disagrees that "recovery" actions *per se* are necessary for the PMV, in that the there is no evidence that the plant has actually suffered a perceptible decline in population. That is, there is no evidence that the species must "recover" from any actual downturn in population. It has been, and remains, the ASA's position that the PMV has long existed in large number at the dunes – sometimes overtly in the form of surface plants, sometimes in well-stocked seed banks – and therefore has never been "threatened" as that term is used in the Endangered Species Act. The 1998 listing of the PMV as "threatened" was made without the benefit of the many plant studies conducted since 2000 and appears to have been in error. *See,* ASA's "Petition to Remove the Peirson's Milk-vetch from the Federal List of Threatened and Endangered Species," submitted to the Service in July 2005.

supported OHV use for decades, yet the PMV populations in these areas continue to be large and stable.

Indeed, we would recommend that the Service and the Bureau of Land Management ("BLM") look very carefully at these areas – especially those near the camping areas at Gecko Road and Dune Buggy Flats – before imposing any additional management actions or use-constraints. For example, Unit 2 of the proposed CHD (Gecko-Glamis) separates the Gecko Road camping area from the open dunes. If management restraints are imposed in Unit 2, access from the camping area to the dunes would be severed. The same situation occurs in the Dune Buggy Flats camping area. Unit 3 of the proposed CHD (AMA/Ogilby) is interposed between the camping area and the open dunes. Again, if use restraints are imposed in Unit 3, access from the Dune Buggy Flats camping area to the dunes will be cut off. Every year, tens of thousands of ISDRA visitors use the camping areas at Gecko Road and Dune Buggy Flats as staging grounds for duning activities, with little detriment to the PMV. It would seem prudent, therefore, to monitor this use prior to changing the management regime in Units 2 and 3. If the monitoring data continue to show that the PMV and recreationists (including OHV users) can peacefully coexist in these key areas, then no additional restraints would be warranted. Note also that from an economic impact perspective, any additional restraints that would cut off the camping areas at Gecko Road and Dune Buggy Flats from the open dunes will result in significant reductions in visitorship and corresponding economic losses for local and regional businesses, many of which are owned and operated by members of the ASA.

B. Comments on the Economic Impact Analysis Prepared by Industrial Economics, Inc.

The ASA would like to commend the Service in commissioning an EIA that attempts to address the court-identified deficiencies of the economic analysis previously conducted for the 2004 Final CHD Rule. To prepare comments on the EIA, we asked that our members, especially those with business interests that might be affected by the proposed CHD, to review the document and provide input regarding its conclusions. In addition, the ASA retained an economic analyst, McClure Consulting LLC ("McClure"), to evaluate the EIA from a methodological perspective.

1. Summary of Comments from ASA Members

The ASA membership, while finding much to admire in the EIA, did identify a number of key shortcomings that likely caused the report to undervalue the economic impact of additional management constraints at the ISDRA resulting from the proposed CHD.

First, a number of members found that the EIA failed to account for "high-dollar" investment items such as quads, sand rails, dune buggies, motorhomes, trailers, engines, and specialty parts. These items represent a huge part of the ISDRA economy. The EIA, however,

does not appear to have factored them into its assessment. Moreover, much of the high-end equipment used by ISDRA visitors is dune-specific and cannot be used anywhere else. If additional restrictions on duning activity are imposed as a result of the proposed CHD, this equipment will be rendered value-less and no reinvestment in such assets will occur.

Second, the ASA disagrees with the EIA's attempt to analogize the duning experience at the ISDRA with recreational experiences at OHV parks in North Carolina and Utah. Not only are the resources vastly different in terms of size and character, the type of equipment used is likewise dissimilar. In short, the two experiences are simply too different to be compared meaningfully. For this reason, the per-visit dollar figures for the North Carolina and Utah parks cannot be used to determine the per-visit dollar figure at the ISDRA. (For additional comment on this issue, please see the McClure opinion letter, dated September 21, 2007.)

Third, the EIA fails to recognize that not all areas of the ISDRA – and certainly not all areas contained within the proposed CHD – are of equal recreational (and therefore economic) value. It treats all areas as equally desirable from a recreational point of view, which is simply not accurate. A management decision to close popular dune-access routes near the Gecko Road camping area, for example, will have a much larger drag on visitorship *throughout* the ISDRA than a similar closure in Mammoth Wash. Indeed, if duners cannot reach their preferred recreational areas from the popular Gecko Road camping area (or the Dune Buggy Flats camping area), their incentive to visit the ISDRA at all is greatly diminished, which means visitor numbers in the other sectors will fall as well. This dynamic is not captured in the EIA. As a result, the EIA underreports the economic effects of the proposed CHD.

Fourth, many ASA members own businesses that depend in large part on dune-related patronage. Although these business owners are well-known in the community and easily reached, none of them was contacted by Industrial Economics during the preparation of the EIA. As a result, the EIA fails to include input from those business owners who are most likely to be affected by the proposed CHD and any management decisions that flow from it. This is a major deficiency of the report.

Fifth, due to the likely economic impacts of increased management constraints that block dune access from the camping areas at Gecko Road and Dune Buggy Flats, the ASA specifically requests that the Secretary of the Interior exclude these areas (*i.e.*, portions of Unit 2 and Unit 3) from the final CHD.

Sixth, the EIA fails to acknowledge the existence and economic importance of travel corridors through the various units of the proposed CHD.[♦] These corridors have existed

[♦] Such corridors are common in recreation areas with sensitive species. They exist at the Coral Pink Dunes in Utah to provide vehicle access around beetle habitat; they exist at Sand Mountain in Nevada to provide vehicle access around habitat for the Sand Mountain Blue Butterfly; and they exist at Oceano Dunes (CA) and Oregon Dunes National Recreation Area (OR) to provide vehicle access around habitat for the Western snowy plover.

for years and have been acknowledged by BLM to have protected status under Revised Statute 2477. Moreover, these corridors perform a key recreational function by providing access between duning areas and camping/staging areas. If they were blocked or otherwise eliminated as a result of the final CHD, many of the popular duning areas would become inaccessible, thus reducing the incentive for duners to visit the ISDRA. The economic impact of these "lost" trips would be considerable and the EIA should have taken this into account. For these reasons, the ASA specifically requests that the Secretary of the Interior identify the key travel corridors (especially those with RS 2477 status) in each CHD unit and exclude them from the final CHD.

2. Summary of Comments from McClure Consulting

As indicated above, the ASA retained McClure Consulting to review the EIA and identify any weaknesses in its methodology, analysis, and conclusions. A copy of the McClure opinion letter is attached hereto as Exhibit 1 and is incorporated by this reference. Although the McClure opinion letter speaks for itself, we would like to highlight some of its main points.

- Unlike Industrial Economics, McClure Consulting actually made contact with dune-related business owners and asked for their opinions regarding the economic impact of additional closures at the ISDRA. As described on page 5 of the opinion letter, "a substantial loss of access to ISDRA dunes would be devastating to their business in terms of not only sales but also investment in the specialized equipment and other aspects of serving the sand recreation market . . ."

- McClure determined that there is "a wide-spread industry base that is very closely tied to ISDRA," and that the individual businesses that comprise this industry base could be severely affected by additional management constraints imposed as a result of the CHD.

- McClure indicated that the EIA did not avail itself of recent data that would have improved the economic impact analysis. Specifically, McClure criticizes the EIA for not consulting a report entitled, *A Profile of the 2006 Visitor to the Imperial Sand Dunes Recreation Area* (Haas 2006), and a second study entitled *An Analysis of the Economic Impact of the Visitors to the Imperial Sand Dunes Recreation Area* (Collins 2007).

- McClure found that the EIA's assessment of "efficiency effects" was problematic, especially its evaluation of the "welfare impacts" of restricting OHV access to the dunes. Ultimately, McClure determined that the EIA estimate of welfare impact – $85.9 million – was too low, and that this low estimate stems from the $140 per "lost" trip figure used in the

EIA analysis. According to McClure, the $140 number is substantially lower than what the data would indicate.

- McClure questioned the EIA's visitation impacts assessment, especially its failure to recognize the qualitative distinctions among different areas within the ISDRA. "IEc's arbitrary assumption regarding visitation impacts results in a study that may substantially understate the welfare loss in absolute terms and that distorts the calculation of the relative significance of the impacts in percentage terms." (McClure, at p. 8)

- McClure found that the EIA also failed to appreciate the important interrelationships among the various management areas – *i.e.,* the fact that "closures within one management area may result in a reduction in the effective accessibility of other areas, and thus may have a much further-reaching impact on visitation levels . . ."

- McClure criticized the EIA for basing its "dollar value for welfare loss" on data obtained from recreation areas in Utah and North Carolina. As noted by McClure, these recreation areas, as well as the recreation experience they provide, are functionally dissimilar from the ISDRA and cannot be used for comparison purposes. Indeed, McClure painstakingly shows how the EIA's use of the Utah and North Carolina examples does not comply with the guidelines for such analyses set forth in "Office of Management and Budget Circular A-4 regarding Benefit-Transfer Methods." Ultimately, McClure concludes that the EIA "fails to justify its use of the benefit transfer method. The recreational resources and the contexts evaluated in the other two studies are simply not similar enough to allow for a valid transfer of data."

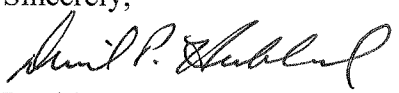
The upshot of the McClure assessment is that the EIA, while a significant improvement over the economic effects analysis conducted for the 2004 CHD Rule, suffers from important methodological shortcomings. These shortcomings, moreover, tend to understate the dollar value of each visitor trip to the ISDRA as well as the economic effect of that trip if "lost" due to management constraints in the proposed CHD areas. It is imperative that these numbers more closely approximate reality. Otherwise, the true economic impact of the proposed CHD will not be known.

C. Conclusion

The ASA concurs generally with methodology used to develop the proposed CHD. We are concerned, however, that additional management constraints, especially those that may affect dune access from the camping areas near Gecko Road and Dune Buggy Flats, may be imposed without a refined assessment as to whether such constraints are actually necessary to protect the

PMV and ensure its "recovery." In addition, it seems clear that restrictions in these two areas will likely have a significant adverse affect on the local and regional economy, as they are – and have been – extremely popular with dune visitors. It is also imperative that the long-standing travel corridors be excluded from the final CHD to ensure that the ISDRA can continue to function as a recreational resource. Finally, it would appear, based on the McClure assessment, that the EIA under valued key economic factors, resulting in a substantial underreporting of potential economic impact. Please take these factors into account as you deliberate on the ultimate size of the CHD. It is the ASA's position that Unit 2 and Unit 3 of the proposed CHD can be reduced in size to provide reasonable and safe dune access from the camping areas near Gecko Road and Dune Buggy Flats, and that such an exclusion could be accomplished without compromising the PMV. The ASA also believes that the travel corridors can likewise be excluded with no threat to the plant.

Sincerely,



David P. Hubbard
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September 21, 2007

Bob Mason, Chairman
Board of Directors
American Sand Association
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La Verne, CA 91750

Dear Mr. Mason:

This Opinion Letter, including the pages that follow, constitutes our response to the report *Economic Analysis of Critical Habitat Designation for the Peirson's Milk-Vetch*, Draft, July, 2007, prepared by Industrial Economics, Incorporated for the U.S. Fish and Wildlife Service (the IEc report). The letter was produced at the request of the American Sand Association (ASA) for the organization's internal use. This material addresses primarily various specific aspects of the report, as noted, and in some cases addresses general, conceptual issues raised by the potential for designation of critical habitat at the Imperial Sand Dunes Recreation Area (ISDRA).

Our review of the IEc report was structured to meet the relatively short time frame available for this purpose, so we have attempted to address what appeared in our opinion to be the most obvious issues and those with the most potential for meaningful commentary. Having said that, we are not aware of any significant issues left unaddressed.

Sincere regards,

Joseph E. McClure,
Principal

EXHIBIT 1

GENERAL TOPICS

Unique socioeconomic aspects of the experience

Duning, as practiced in the ISDRA, has spawned a wide range of entrepreneur-driven innovation, involving hundreds of small businesses, distributed throughout the West and elsewhere in the U.S. It is in this respect an exemplary form of free enterprise at its best, where risk-taking, creative individuals perceive an opportunity to marry recreational interests with a unique resource, and rise to the challenge of producing and marketing the appropriate goods and services.

A strong sense of community identity has arisen among ISDRA visitors, based on a combination of factors such as the following:

- The sheer size of ISDRA, which allows many participants to congregate and recreate there in a relatively homogenous series of activities,
- The excitement level of the duning activity that takes place there,
- Participants' involvement in the technological innovation and entrepreneurship that has developed in response to the need to: 1) have specialized equipment for operating most effectively on sand dunes, and 2) to support and cater to the community of dune participants,
- The need to physically camp at the sport location, in order to maximize the experience,
- In spite of its many high-tech components, the fact that the sport, and the act of being at ISDRA, can be enjoyed at many different levels of investment, so there is an egalitarian aspect of the experience.[1]

The "community" aspect of ISDRA recreation provides "value" to the participants that can easily go unquantified in an analysis such as that produced by IEc (and which is difficult to quantify in any case), but is nevertheless important. For example, the May 2003 EIS (page 150) quotes the following finding from a major national recreation survey:

> "Many families use outdoor recreation as a way to form bonds and transfer important family values to children. A number of Americans feel recreation strengthens the family as a unit and the children as individuals."

[1] A reliable source, asked to describe recreational activities at ISDRA, told the author that he had once observed a recreation party operating with a set of equipment that totaled $3 million, while another group nearby had only a $3,000 vehicle.

To the extent this kind of result applies to families recreating at the ISDRA, the social benefits could be substantial. Even if such benefits can only be qualitatively addressed, they should not go unmentioned.

The full scope of economic effects involved in cut-backs in ISDRA-based recreation

In the context of standard economic analysis practice as reflected in the IEc report, the portion of the analysis that addresses "regional impacts" focuses on Yuma and Imperial Counties. Although there are practical and theoretically sound reasons for doing this, the unique issues associated with potential ISDRA closures require, in an ideal analysis environment, a broader examination of how local economies could be affected. In this sense, these "local" economies include not only the two counties but also the host communities of the recreationists and the hundreds of businesses that serve these recreationists.

In the scope of this document, we have taken only a few steps to document some aspects of the geographic and economic scope of the sand-recreation industry. These efforts should not in any way be considered definitive methods, or findings, related to this complex issue. They are offered here only for illustrative purposes. Table 1 is a summary of 488 advertisers who support the American Sand Association. The table shows the number of businesses (and also other associations) by state and city. Cities having less than one business represented are combined into their respective states (note however that there are 10 "other" states, besides California, Arizona, and Nevada, that have cities with one advertiser located there). Note that a small proportion of these businesses (shaded cells) are in Yuma/Imperial Counties.

Table 1. Geographic Distribution of 488 ASA Advertisers

	State			
City	Arizona	California	Nevada	10 other states
Phoenix	29			
Mesa	25			
San Diego		18		
Anaheim		14		
Corona		14		
Riverside		13		
El Cajon		12		
Temecula		12		
El Centro		11		
Glendale	11			
Santee		10		
Yuma	9			
Long Beach		6		
Oceanside		6		
Brawley		5		
Chandler	5			
Fontana		5		
Gilbert	5			
Lake Havasu City	5			
Lakeside		5		
Las Vegas			5	
Moreno Valley		5		
Ontario		5		
Scottsdale	5			
Tempe	5			
Vista		5		
Yucca Valley		5		
Alpine		4		
Apache Junction	4			
Chino		4		
Escondido		4		
Huntington Beach		4		
Irvine		4		
Los Angeles		4		
Murrieta		4		
Peoria	4			
San Bernardino		4		
Santa Fe Springs		4		
Tucson	4			
Whittier		4		
Bakersfield		3		
Fountain Hills	3			
Fresno		3		
La Habra		3		
San Marcos		3		
Stanton		3		
Apple Valley		2		
Banning		2		
Chula Vista		2		
Colton		2		
Costa Mesa		2		
Downey		2		
Fullerton		2		
Garden Grove		2		
Glendora		2		
Grass Valley		2		
Hesperia		2		
Higley	2			
Lake Elsinore		2		
Mission Viejo		2		
Montclair		2		
Pahrump			2	
Palm Springs		2		
Paramount		2		
Rancho Cucamonga		2		
Rialto		2		
Sacramento		2		
San Juan Capistrano		2		
Simi Valley		2		
Tolleson	2			
Valley Center		2		
Winterhaven		2		
Wittmann	2			
# cities with 1 estab. each	11	79	2	17
Totals by state	**131**	**331**	**9**	**17**

Source: American Sand Association, Inc. website database of advertisers; authors.

Table 2 (which includes some of the same entities on Table 1) is a summary of the exhibitors at a major annual event focusing on sand sports: The Sand Sports Super Show (SSSS). The data are taken from the show directory for the 2006 event, held in Costa Mesa, California.[2] The table illustrates the broad scope of goods and services related to sand dune recreation, and gives some indication of the diversity of goods/services among firms, and the sheer volume of business activity involved.

Table 2. Businesses and Product Types Represented at SSSS

Product Type	# of businesses under listing (includes multiple entries for some businesses)
Apparel, Miscellaneous	96
ATVs & Accessories	85
Drive Train	33
Engines	28
Engine Accessories	66
Media / Public Services	34
Sandrails	87
Sandrail Accessories	124
Services & Equipment	74
Suspension	60
Tire & Wheels	35
Trailers, RVs, Campers	47
Total listings	769
Total unduplicated establishment count	346

We also spoke by phone to a small group of businesspersons who are part of the datasets on Tables 1 and 2. The point of the interviews was to obtain some confirmation of the nature of such businesses and obtain personal views from a businessperson's perspective. Interviewees stated that their businesses were 75 to 95 percent dependent on ISDRA recreationists. Their customer base was primarily from California, Arizona, and Nevada. To them, a substantial loss of access to ISDRA dunes would be devastating to their business in terms of not only sales but also investment in the specialized equipment and other aspects of serving the sand recreation market; because the alternative locations for this activity are severely limited, especially for the core of ISDRA users in southern California, Arizona, and Nevada. (The subject of

[2] Michael Sommer & Associates, The Official 2006 Sand Sports Super Show Directory. (undated, the show was held September 15-17, 2006.)

limited alternative areas is addressed in the IEc report, on pages 3-8 and 3-9. The report notes that the next-largest closest site to ISDRA, Dumont Dunes, is only 7 percent the size of ISDRA, that some other sites have their own closure issues, and that BLM has noted that other sites do not provide the same recreational opportunity.) One businessperson who could offer some historic perspective on this issue pointed out that in the 1970's, Glamis generated about 50 percent of his total business, but the figure today was about 75 percent, due to the loss of alternative duning locations over the years. In short, these businesses are very vulnerable to failure in the face of restricted dune activity – a point we will discuss again under the heading "Effects on local small businesses."

The point of this section of our response is to help illustrate the fact that there is a widespread industry base that is very closely tied to ISDRA. While the fact that they are widely distributed throughout (primarily) the three states of California, Arizona, and Nevada means that losses in these businesses could very well have a proportionately small effect on the overall economies of their host regions, the specific establishments involved can be severely impacted.

Although the interviews and the two preceding tables focus on the community of specialized businesses that provide dune-specific vehicles and accessories, mainstream manufactured products, involving in some cases major U.S. corporations, also are very much a part of the dunes experience. Other types of off-road vehicles, pick-up trucks and SUVs of all types, and a wide array of camping vehicles also operate at ISDRA, and their purchase by ISDRA users is to some extent, if not totally, affected by these users' ISDRA visitation habits.

SPECIFIC REVIEW POINTS

In responding to the 3-14-06 court ruling, Industrial Economics, Incorporated (IEc) revised its original report by estimating the level of reduced OHV activity downward, addressing the issue of potential benefits to the managing agencies by providing opinions from managers that this would not be the case, and revising their methodology to reflect only incremental effects.

1. Findings could be substantiated more fully and convincingly with more complete data.

Studies of this type are nearly always adversely affected by limited data. However, in this case there is additional information available that was referred to (indirectly in this case) but not incorporated into the analysis, namely *A Profile of the 2006 Visitor to the Imperial Sand Dunes Recreation Area* (Hass, 2006). Although dated October 1, 2006, the version of this report that we received from Dr. Haas was still labeled "draft," and this may have had some effect on its use by IEc. A companion report based on the same survey, *An Analysis of the Economic Impact of the Visitors to the Imperial Sand*

Dunes Recreation Area[3] has a submittal date of June 2007 and consequently would not necessarily have been available, even in draft form, to IEc (although they could conceivably have taken the raw survey output and produced their own analysis of the economic impacts). In any case, the survey-based data add considerable detail by which spending patterns and impacts to specific communities, for example, could be refined. For example, IEc assumed that 15% of regional expenditures would occur in Yuma County, but Collins' figures suggest the proper allocation for Yuma County is 25-30% (based on a quick review of her Tables 2 thru 9).

There is nothing in the Hass study that indicates to us that the survey process and findings are other than fully credible, and the study should therefore have priority as a data source given its specificity to the area and the issues at hand. While the Collins study would benefit, from our initial review, from additional refinement,[4] rough calculations based on its figures support the "high expenditure estimate" used by IEc in calculating regional expenditures. Since the IEc expenditure range is sizable ($279.04 to $543.67), this is an important issue for readers of the report who might be tempted to simply average the two extremes. Note also that Collins defines the "region" as within 50 miles of ISDRA, which on the one hand is a geographically smaller area than that used by IEc, but on the other hand includes (appropriately) Blythe, outside of Imperial County but a community with local spending by recreationists, as the Collins report demonstrates (although these difference probably have minimal effect on measuring the "regional impacts").

2. Inadequacies of IEc's Analysis of "Efficiency Effects."

The IEc study's evaluation of "efficiency effects" – one of the two major categories of economic impacts considered in the analysis – is inadequate to provide a reasonable basis for a policy decision of this magnitude. As described in the IEc report, efficiency effects represent the "opportunity costs" associated with the potential access restrictions to be implemented in the ISDRA. Per the IEc analysis, the most significant component of the efficiency effects is the loss of welfare to OHV recreators, with this welfare loss comprising $85.9 million (94%) of the total (undiscounted) impact of $91.8 million.

We believe that the estimate of $85.9 million may significantly understate the welfare loss to OHV recreators. Despite its overall bulk, The IEc report is surprisingly "thin" when it comes to real analysis of the welfare impacts resulting from potential

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[3] Kimberly Collins, Ph.D., An Analysis of the Economic Impact of the Visitors to the Imperial Sand Dunes Recreation Area. June 2007. Prepared for United Desert Gateway.

[4] To fully understand the implications of Collin's Table 1 it is necessary to adjust spending for individual categories of goods/services by the proportion of visitors who actually spend money in that category. By doing this, regional mean spending is closer to $450 than the $913.70 implied in the table as it is. (The calculated value would be $438.19, but with a detailed review of the survey results, there would almost certainly be justification in raising some of the values based on a smaller total "effective" sample for specific spending categories, or other factors.) We did not undertake additional analysis to review the table figures.

access/use restrictions within the ISDRA. Indeed, the entire analysis hinges on just two assumptions:

1. That the designation of critical habitat within the ISDRA will either have no effect on visitation (the "lower bound" scenario) or it will cause visitation to decrease in proportion to the percentage of ISDRA acreage that is closed to OHV use (the "upper bound" scenario); and

2. That the welfare loss resulting from the reduction in visitation is $140 for every "lost" trip.

In other words, the whole analysis consists of simply multiplying the number of "lost" trips by $140. In our opinion, this oversimplified analysis – and the derivation of the assumptions on which it is based – is severely deficient in a number of respects.

Visitation Impacts. For both the "lower bound" and "upper bound" scenarios, IEc's assumptions regarding visitation impacts are suspect in that they fail to recognize qualitative differences among different areas within the ISDRA. The IEc study arbitrarily assumes that closure of a certain percentage of a given management area will result in a reduction in that area's visitation by the same percentage, without considering the attractiveness of the closed area relative to the portion of the management area that would remain open. For example, the study assumes that since the proposed critical habitat represents 17.44% of the Gecko management area, designation of critical habitat (and the resulting closure of that portion of the management area) would result in a 17.44% reduction in visitation to that area. While the proposed critical habitat may represent 17.44% of the total acreage of the Gecko management area, it could very well represent a much larger portion of the net usable/desirable area for purposes of OHV recreation. The IEc study provides absolutely no qualitative analysis of the usability and desirability of the potential restricted areas from the standpoint of OHV recreators and provides absolutely no analysis to justify its assumption that the impacts to visitation will only be as large as the percentage reduction in the gross acreage of open area. As such, the IEc study may significantly underestimate the reduction in the ISDRA's actual capacity for OHV recreation.

IEc's arbitrary assumption regarding visitation impacts results in a study that may substantially understate the welfare loss in absolute terms and that distorts the calculation of the relative significance of the impacts in percentage terms. Under IEc's existing assumption, the study concludes that the reduction in visitation would result in a welfare loss of approximately 5% compared to what would happen in the absence of access restrictions. If, however, the potential closures in the Gecko, Mammoth and Ogilby management areas were assumed to represent 5%, 35% and 20% of the net usable acreage of each area (i.e., approximately double the percentages assumed in IEc's gross calculations), the welfare loss would be a full 12% compared to baseline conditions (i.e., "the world without critical habitat").

By assuming that the impact to visitation will be limited to the percentage reduction in open area, IEc's analysis also fails to recognize important interrelationships among the various ISDRA management areas. Closures within one management area may result in a reduction in the effective accessibility of other areas, and thus may have a much further-reaching impact visitation levels (and overall levels of user enjoyment). The IEc analysis makes no attempt to quantify these potentially significant impacts.

Part of the issue here is that it may not be possible to describe and therefore quantify any such differences at this time, given the still-theoretical nature of potential closures/restrictions. However, the manner in which closures are handled could have impacts that vary widely from simple proportionate relationships to area. There are a number of reasons to believe this would be the case:

- Access to ISDRA occurs at a few specific points, due in part to restrictions that include roadways, canals, the SP railroad, military-use restricted areas, and general topography, plus the current administratively restricted areas. Camping areas likewise tend to be concentrated in specific areas.
- In the May 2003 RAMP, BLM stated that one of the purposes of the RAMP was to "Develop a large continuous geographical area for habitat and species conservation. ... It is important that this area is continuous and that the habitat is not fragmented."

Second, to the extent that the analysis of closure effects is hampered by uncertainties about the actual closure plan, there are accepted analytical methods (and related specialized computer programs) to deal with such uncertainty. For example, the U.S. Army Corps of Engineers, in discussions of its "Principles and Guidelines" for conducting benefit-cost analyses *requires* that:

> "... to the extent possible, the different degrees of risk and uncertainty inherent in water resources planning [be identified and described] clearly so decisions can be based on the best available information. Risk-based analysis is defined as an approach to evaluation and decision making that explicitly, and to the extent practical, analytically incorporates considerations of risk and uncertainty. Risk-based analysis shall be used to compare plans in terms of the likelihood and variability of their physical performance, economic success and residual risks. A risk-based approach to water resources planning captures and quantifies the extent of risk and uncertainty in the various planning and design components of an investment project."[5]

Regardless of how this issue is eventually handled in an analytical sense, it should always be recognized that the relationship between the areas proposed for closure and the loss of value to the recreator could vary considerably, and therefore should not be treated *prima facie,* either quantitatively or qualitatively, as directly proportional.

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[5] ER 1105-2-100, 22 Apr 2000; http://www.usace.army.mil/publications/eng-regs/er1105-2-100/c-2.pdf

Dollar Value of Welfare Losses. In addition to underestimating the likely reduction in visitation levels, we believe that the IEc study applies an extremely low factor to estimate the dollar value of the "lost" trips to the ISDRA. IEc's factor of $140 per trip has been derived from two other studies via an analytical technique known as "benefit transfer." Benefit transfer analysis (BTA) is recognized as a cost-effective, albeit less than ideal, method of placing a dollar value on non-market goods such as a public recreational resource. The process involves finding other studies that have attempted to value similar resources and then applying the factors developed in the other studies to the resource under consideration. In this case, IEc relied on just two studies – one that values OHV recreation in Utah and one that values OHV recreation in North Carolina. The $140 factor appears to have been derived from the North Carolina study.

While BTA is recognized by the Office of Management and Budget (OMB) as a potential method for valuing resources in a regulatory analysis, the OMB's guidelines[6] state that this method is "often associated with uncertainties and potential biases of unknown magnitude" and "should therefore be treated as a last-resort option and not used without explicit justification." The IEc report does not provide any such justification.

The basic problem with BTA is that, unless the analysts are extremely careful in their selection of other studies, the applicability of the other studies to the issue at hand is tenuous at best. In other words, the resource being valued in the original studies must be comparable (and the overall context similar) to the resource to which the values are being "transferred." In order to minimize the problems associated with benefit transfer, the OMB circular outlines very specific guidelines for the application of BTA (assuming its use has been justified at all, which in this case it has not). Despite their unsubstantiated claim that "the proposed transfer conforms to guidelines elaborated in the Office of Management and Budget's Circular A-4 regarding Benefit-Transfer Methods," the IEc researchers, in our opinion, fail to meet the standards stipulated by OMB. In particular, we note the following deficiencies relative to the OMB guidelines (p. 25):

OMB guideline:	"The good, and the magnitude of change in that good, should be similar in the study and policy contexts."
IEc deficiency:	The utilized studies value *general OHV* use in Utah and North Carolina, which is fundamentally different from sand dune recreation in the ISDRA. As we will describe further below, sand dune recreation differs significantly from other types of OHV in the following respects: more limited supply of prime recreation areas; longer travel distances to the recreation areas; longer trip durations; substantially higher investments in recreational equipment (i.e., a substantial portion of visitors use dune buggies); fewer trips per year (i.e., the recreators' "fixed costs" for equipment, etc. must be amortized over fewer trips, resulting in a much higher marginal

[6] Office of Management and Budget, Circular A-4 re: Regulatory Analysis, September 17, 2003.

value per trip); and specialized equipment that has limited usefulness in other settings (again resulting in a higher marginal value per trip to the ISDRA).

The Utah and North Carolina studies relate to the existing value of OHV use at the study sites rather than welfare losses resulting from a proposed *change* in access. Thus, these other studies do not meet the criterion that the "magnitude of change" in the good under consideration should be similar.

OMB guideline: "The relevant characteristics of the study and policy contexts should be similar. For example, the effects examined in the original study should be "reversible" or "irreversible" to a degree that is similar to the regulatory actions under consideration."

IEc deficiency: Again, the original studies are not evaluating a regulatory *change*. Thus, they fail to meet this criterion for applicability to the ISDRA study.

OMB guideline: "The availability of substitutes across study and policy contexts should be similar."

IEc deficiency: The IEc study provides no meaningful comparison of the recreational resources evaluated in the Utah and North Carolina studies to the recreational resources available within the ISDRA. It is therefore impossible for IEc to conclude that the availability of substitute resources is comparable in these different settings. The limited information IEc presents relative to ISDRA substitutes (on page 3-8 of the report) actually confirms our contention that there is no real substitute for the ISDRA. Whereas the ISDRA offers 132,870 acres for OHV recreation, the "substitute" sites listed in the IEc report are all much smaller in size and many of them do not have dunes. Thus, we believe that the studies used by IEc as the basis for the ISDRA analysis fail to meet the criterion of similar availability of substitute resources.

OMB guideline: "If you can choose between transferring a function or a point estimate, you should transfer the entire demand function (referred to as benefit function transfer) rather than adopting a single point estimate (referred to as benefit point transfer)."

IEc deficiency: The IEc study uses the inferior method and transfers a single data point rather than an entire demand function. Moreover, IEc fails to discuss, explain or justify its use of this inferior methodology.

OMB guideline: "Finally, you should not use benefit transfer in estimating benefits if:

- Resources are unique or have unique attributes. For example, if a policy change affects snowmobile use in Yellowstone National Park, then a study valuing snowmobile use in the state of Michigan should not be used to value changes in snowmobile use in the Yellowstone National Park.
- If the study examines a resource that is unique or has unique attributes, you should not transfer benefit estimates or benefit functions to value a different resource and vice versa. For example, if a study values visibility improvements at the Grand Canyon, these results should not be used to value visibility improvements in urban areas.
- There are significant problems with applying an *"ex ante"* valuation estimate to an *"ex post"* policy context. If a policy yields significant change in the attributes of the good, you should not use the study estimates to value the change using a benefit transfer approach.
- You also should not use a value developed from a study involving small marginal changes in a policy context involving large changes in the quantity of the good."

IEc deficiency: IEc's failure to understand the unique OHV experience offered by the ISDRA is evident throughout the analysis. ISDRA and the Utah/North Carolina study sites are at least as dissimilar as the Michigan versus Yellowstone and Grand Canyon versus urban area examples cited by OMB. Thus, per the OMB standard, the Utah and North Carolina studies should <u>not</u> be used in the ISDRA analysis.

As noted previously, the Utah and North Carolina studies analyze the existing value of OHV use in those locations <u>rather than welfare losses resulting from a proposed *change* in access</u>. Thus, use of these studies for the ISDRA analysis fails to meet the OMB's criteria regarding the *"ex ante"* versus *"ex post"* and the small change versus large change issues.

Based on the above deficiencies, we believe that IEc has clearly failed to justify its use of the benefit transfer method. The recreational resources and the contexts evaluated in other two studies are simply not similar enough to allow for a valid transfer of data.

Even if the Utah and North Carolina resources were similar enough to allow for meaningful benefit transfer analysis (which they are <u>not</u>), the two studies themselves are based on methodologies which we believe systematically undervalue recreational resources.

The Utah and North Carolina studies both utilize the travel cost method (TCM), which attempts to assign a monetary value to a non-market recreational resource based on the recreators' travel costs to the evaluated recreation sites. While TCM is a recognized methodology for valuing non-market goods, the literature on resource valuation acknowledges potentially significant problems with it. While we do not attempt here to comprehensively summarize all that has been written on this subject, key issues noted in two published papers are highlighted below.

From an article in the February 1994 issue of Land Economics:[7]

> "Recreationists vary considerably in their investment in durable equipment useful in travel and recreation. Such equipment may be more or less expensive, and more or less specialized. Allocation of the costs of owning and maintaining vehicles and other durable equipment to any particular trip proceeds [is done], if at all, in arbitrary fashion...
>
> "There is general agreement that the opportunity cost of time spent on traveling should be counted among the costs of travel. However the cost of travel time remains an empirical mystery...
>
> "These problems with TCM have proven rather intractable. Standard TCM practice, despite three decades of research, does not yet incorporate procedures to resolve these difficulties convincingly... I argue that they are manifestations of a common problem, one that can be expected to remain intractable. The common problem concerns specifying the 'true' costs of participating in recreation at a particular site."

From a paper published in July 2002 by Fondazione Eni Enrico Mattei:[8]

> "Some relevant costs for the decision-making process are often not measurable and/or subjective (i.e., the problem of valuing time)...the recreational use of natural resources often involves annual fixed costs, independent of the number of visits carried out."

The issue of "investment in durable equipment" or "annual fixed costs" is extremely relevant to ISDRA recreators. In particular, the extraordinary investment in sand rails, dune buggies, etc. (relative to the ATV's and trail bikes predominantly used in the Utah and North Carolina locations) results in substantially higher costs for participating in OHV recreation in the ISDRA. Moreover, according to IEc's own comparison (see their Exhibit 3-5), the typical ISDRA user makes 3 trips per year to the ISDRA, compared to 13.9 trips per year for visitors to the Utah sites and 6 trips per year for visitors to the North Carolina sites. Thus, in the case of ISDRA users, a higher total cost must be allocated over fewer annual trips. If these realities were factored into a properly-designed TCM analysis, the result would be a much higher marginal value per trip. In other words, the amount of welfare (measured, by proxy, in terms of travel costs)

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[7] "A Difficulty with the Travel Cost Method" by Alan Randall.
[8] "Individual Travel Cost Method and Flow Fixed Costs" by Paolo Rosato and Edi Defrancesco.

enjoyed by ISDRA users is likely to be substantially higher on a per-trip basis than the welfare enjoyed by users to the Utah and North Carolina sites. For this reason, the "benefits transfer" method employed by IEc is unacceptable in that it likely substantially understates the potential loss of welfare associated with designation of critical habitat.

The IEc report itself acknowledges (but fails to offer any resolution for) several shortcomings in its methodology:

> "It is expected that the value of OHV use at the ISDRA would be at least that which was presented in this study for a number of reasons. First, the per-trip, per-person value estimate likely underestimates the value of trips taken to the ISDRA given the special nature of this site as one of the most popular OHV sites in the western United States. Second, the sites surveyed in the Englin, et al. [North Carolina] study reflect sites that are less unique than the sand dunes of Southern California. These sites reflect over 100 miles of forested areas available to all-terrain vehicles, dirt bikes, and four-wheel drive vehicles. In addition, the North Carolina OHV sites have several substitute opportunities that are in close proximity to each other, relative to the dune-based OHV sites in California. Moreover, this estimate reflects a per-person consumer surplus value applied to an estimate of per-party OHV trips. The existing literature does not provide guidance on how to address issues related to this, including counting for children in the vehicle, and determining how to allocate expenses (and value) across individuals in a group" (p. 3-15).

In addition to the above problems, IEc's estimates of welfare loss are deficient in that they assume that welfare losses would only be experienced by OHV recreators who, in response to new access restrictions, would choose to forego trips to the ISDRA. In reality, the "remaining" recreators (i.e., those who would continue to visit the ISDRA despite new restrictions) could also experience welfare losses due to impacts to the level of enjoyment derived from recreating in the ISDRA. The IEc report also acknowledges (but fails to offer any resolution for) this methodological shortcoming: "The analysis does not account for losses associated with a reduced quality of experience (i.e., consumer surplus) for users who continued to take OHV trips to the ISDRA under closures and experienced increased congestion or those users who visited less desirable substitute sites" (p. 3-18).

3. Effects on the region (as defined by IEc)

These hinge almost entirely on the estimates of spending by ISDRA recreationists in the ISDRA region, defined in the report as Imperial and Yuma Counties. These estimates, at the upper levels given by IEc and as discussed above, seem reasonable for the in-region spending.

The "multiplier effect" of this spending is generated through the use of the IMPLAN model, following standard procedures that one would assume IEc commonly applies. However, embodied in the IMPLAN application is the concept that the estimated

impacts are "one-time only," and thus have no annual component. This is theoretically correct, but it must be kept in mind that the job losses continue until, if possible, those jobs are absorbed into some other activity or the general economy.

IEc states in the report that the estimates could be overstating reality. They point out that IMPLAN is a static model that might not properly incorporate the notion that economies adjust to losses in a specific industry through re-employment and the like (which is true, and in fact this adjustment might occur fairly quickly). However, in small cities, and in the case of businesses serving a very specialized activity, there are no obvious substitutions that could be made, and it is not likely that any substitutions would occur quickly. Overall expansion of economic activity, which is generally occurring in the region, can eventually take up the slack of many unemployed persons. However, ISDRA-based losses are different from, for example, lay-offs at a manufacturing plant that a new manufacturing prospect would then view as an inducement (a ready labor supply) to locate in the affected city.

IEc also notes that IMPLAN limitations include the fact that the model relies on 1998 data, and that significant changes in the local economies could affect the results of the analysis. In Yuma, particularly, changes in the local economy have been significant since 1998, and generally this would result in higher multipliers than those generated by a model based on a simpler local economy. Also, spending on items such as groceries has a greater effect on a local economy if the spending is by tourists, who are "importing dollars" into the economy, rather than locals, who are simply recirculating existing dollars. Although we have not attempted to dissect the IMPLAN model's application in detail in this particular case, such models can miss this kind of subtlety.

4. Effects on local small businesses.

In the IEc report, this topic is treated in a rather cursory fashion, and the authors provide some background on the topic that implies that even federal agencies have struggled with how to meaningfully interpret the requirement. However, the issue is important in the ISDRA impact region, for the reasons outlined above (General Topics), and the fact that dune-specific business types or individual businesses can be strongly impacted by reductions in ISDRA visitation. This specificity is lost in the generalized analysis used by IEc that lumps businesses together into broad categories. Again, this is a case where more complete data could support a more thorough analysis.

From a methodology standpoint, there are two problems with the IEc approach. First is the problem of scale. IEc estimates the total number of small businesses in two major business categories (pages A-4 and 5): 1) groceries, food, and drink, and 2) OHV equipment, services, and supplies (for which the standard business classifications of Recreational Vehicle Dealers, Automotive Parts and Accessories, and Tire Dealers are used as a proxy). While IEc argues that all small businesses in these categories in the two counties are potentially affected, with the inevitable result that the average effect on

each would be rather small, a more reasonable assumption would be that a considerably smaller number of businesses are affected to a greater extent than other similarly classified businesses. The analytical problem of course is that the data by which to make these kinds of distinctions are not easily obtained. However, even in the absence of empirical data, assumptions about the likely number of existing businesses could be refined, for example by using location (businesses closest to freeway exits, for example) and perhaps other factors as screening mechanisms.

As a simple means of estimating a "lower bound" of the number of local affected businesses, we summarized the 546 business listings by type and location that appear in the Local Business Directory section of United Desert Gateway's *Off-Highway Vehicle Recreation Guide, 2007-2008*. The results of this exercise are shown on Table 3. The few listings that were outside the two counties were not included in the table. Of the total listings, only 23 represent multiple entries for the same establishment.

Table 3. In-Region Business Types and Locations

	Location																			
Business Type	Imperial	Brawley	El Centro	Yuma	Westmorland	Somerton	Holtville	Indio	Boulevard	Calexico	Los Algodones	Mexicali	Felicity	Winterhaven	Calipatria	Heber	Welton	Niland	Imperial County
ATV Retail	1	1	1	3	1														
Ambulance Service			1																
Automotive Rentals	1	1	2	4															
Automotive - Sales, Service and Repair	1	13	16	28	1														
Bail Bonds			1																
Bakeries		3	1	3															
Banks & Credit Unions		5	11	11		1													
Beverage Distributors	1	2	3	2	1														
Book Stores		1	2																
Car Wash		4		1			1												
Casinos				1				1	1										
Chiropractors	1	1		1															
Coffee Shops		2		2						2									
Dentists		3	13	7			1				1	1							
Electrical Contractors & Supplies		2	4	4		1													
Electronics			1																
Entertainment, Recreation & Sports	2	3	4	8			1			1			1						
Equipment Rentals, Sales & Service		2	1																
Film Industry			2																
Firewood		3	2											1	1				
Gas Stations / Food Marts	3	2	6	2															
Grocery Stores		3	6	6												1			
Health Clubs	1	3	1	4															
Hospitals		1	1	1															
Hotels / Motels	1	4	12	22	1		1			1					1				
Ice Cream			5	2															
Laundromats				3															
Machine Shops			1																
Media & Related Services		1	7	6			2					1							
Mexican Auto Insurance			2							1									
Motorcycles			1	3															
Off Road Parts				1															
Optometrists		3	3	2															
Pharmacies, Medical Equipment & Supplies		3	5																
Postal Services		1	2	1															
Potable Water		1	2																2
Propane		2	3	1															
Restaurants / Catering	1	14	32	47						3					2		1		
RV Dump Sites / Service		2	1	1															1
RV Parks		1	4	14													2	2	
RV Sales & Services		1	4	8															
Security Guard & Patrol Services			3																
Shopping		1	2	4															
Storage Facilities	3	2	3	6															
Tire Disposal			1																
Towing - Automotive		3	1		1					1									
Veterinarians & Pet Supplies		1	3																
Waste Disposal - Landfills	1		1													1			
Welding Shops & Supplies			2	1															
Wholesale Warehouses			2																
Total	17	95	181	210	5	2	6	1	1	9	1	2	1	1	4	2	3	2	3

In terms of spending estimates among the communities, figures in the Collins report indicate that Brawley has the highest percentage of spending by ISDRA recreationists at 41 percent of the total, El Centro is next at 27 percent, and Yuma third at 24 percent, with the rest going to Blythe/Palo Verde.[9]

Discussions with Chamber of Commerce representatives in the local communities reveal that dune-specific business start-ups have occurred in some of these communities, and that there are other specific businesses, in the general categories of food and transportation, for example, that are especially likely to be negatively affected – some to the point of job losses – with a cut-back in dune activity.[10]

Another component of the estimate of local affected businesses would include the vendors operating out of temporary facilities at ISDRA. The May 2003 RAMP (page 47) states that part of BLM's management activities includes issuing 80 to 100 permits for vendors.

The second problem is the selection of business types to include in this analysis. IEc makes their selection of two business categories based on the information on Exhibit 3-6 (page 3-16), which as we have stated elsewhere reflects incomplete information that was at least in part available to IEc at the time of their work. Specifically, the results of the Collins report give a different picture of expenditures among business types, as shown in Table 4 below.

Table 4. Spending Allocation per Collins Report

Spending category	% of locally based expenditures /1
Overnight Camping Permits	5.14%
Motels,Hotels, RVParks,Resorts	1.20%
Restaurants and Bars	7.55%
Groceries and Supplies	20.81%
Gasoline and Oil	26.87%
Vehicle Maintenance and Repair	23.79%
Entertainment and Recreation Entrance Fees	1.30%
Souvenirs and Clothing	11.05%
[Other] Retail Sales	2.28%
Total	100.00%

1. Weighted by the # of visitors spending on that item.
Source: (Collins 2007); authors.

[9] We have not included the dollar totals here, as we do not fully understand their derivation and have not attempted to discuss this with Collins.

[10] Telephone communication with Cathy Kennerson, CEO of El Centro Chamber of Commerce, and Nicole Nicholas, Brawley Chamber of Commerce.

From the table, Groceries and Supplies, and Restaurants and Bars, combined as per IEc (although these need not necessarily be combined), have the highest percentage of spending, gasoline and oil the next, and Vehicle Maintenance and Repair the third-highest. With the figures IEc used, the other categories besides the two they used in the analysis had less than 8 percent of expenditures, but by Collin's figures, sales of Souvenirs and Clothing was 11 percent, so it should perhaps also be included in the analysis. Overall, these results suggest that the base of small business types potentially affected should be expanded.