QSI Review of the Second ESI User Survey

How are the hard copy and PDF maps used?

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Introduction

The National Oceanic and Atmospheric Administration's Office of Response and Restoration (OR&R) has conducted two surveys to elicit end users' comments and suggestions about current Environmental Sensitivity Index (ESI) map products. The first survey was conducted in 2012 with the results presented at the ESI User Workshop on May 1-3, 2012. The second survey was conducted in August and September of 2014. Results from the 2014 survey are the focus of this report. Photo Science Incorporated, a Quantum Spatial company, hereafter referred to as QSI, and OR&R intend to use the results from both surveys as a general guide to direct the revision process for the ESI map atlas products to be produced for the Sandy Recovery Area regional update.

Purpose

With an eye toward improving the design and development process of the ESI product, QSI has evaluated and summarized the responses of the 2014 survey within this report. It is the intent of QSI to use the suggestions and comments gleaned from the survey to inform the planning and production processes for the soft and hard copy atlas products.

Survey Sections and Questions

The 2014 user survey can be broken into five distinct sections. The "Who and What" section consists of a series of questions designed to determine who typically uses the hard and soft copy ESI maps, and for what general purpose. The "3 Most Important Pieces of Information" section includes a series of questions asking users to identify the most important information acquired from ESI maps. The "Biology" section focuses on questions related to specific biological content and how these features are depicted on ESI maps. The "Map Configuration" section solicited user feedback on likes and dislikes of the content and design of current ESI maps, and includes free-response questions for suggestions about how to improve upon future map products. The "General Comments" section includes additional free-response questions in an effort to capture general comments and suggestions that may not have been covered in the previous four sections of the survey.

A total of 41 respondents completed the 2014 survey. All survey questions and results are presented in their entirety in the Appendix. Major trends of the survey responses are summarized in the main body of this report.

Who and What

The first series of survey questions seek to determine who is using ESI maps and for what general purposes. The majority of the 2014 survey respondents (59%) identified themselves as employees of state agencies. The second largest user group to fill out the survey was NOAA-affiliated federal employees (23%). It should be mentioned that the participation of these two user groups was reversed in the 2012 survey, with 49% of respondents representing federal agencies and 28% representing state agencies. As a result, survey responses from 2012 may be biased towards the perspectives of federal agencies, while survey results from 2014 may be biased towards the perspectives of state agencies.

Respondents indicated that the ESI maps are utilized in a variety of contexts, although the majority of the users (76%) indicated that they use the maps for oil spill response and planning. Additionally, 43% of respondents indicated that they use the atlas maps for both planning and response to non-oil related events. A few respondents indicated that they use the maps for biological research and data maintenance. These additional uses indicate that ESI maps are used within a broader context than simply oil spill planning and response.

3 Most Important Pieces of Information

A free-response question section asked respondents to rank the three most important pieces of information they hope to extract from the ESI maps in the event of an oil spill. For the sake of interpretation, these responses have been combined into more generalized categories to assist QSI in the atlas design and development processes. The following general categories were used to calculate percent responses: shoreline classification, human use or socio-economic features, biological resource features, or basemap and background data. The majority of respondents indicated that accurate representation of biological resources was the most important overall category to extract from an ESI map when responding to an oil spill (n = 21; 64%). Shoreline classification ranked as the second most important feature to extract from the ESI maps (n = 9; 27%). Of those respondents that did not indicate

biological features as the most important piece of information to extract, 24 or 65% indicated it was the second most important feature.

A word cloud, a common method for visualizing the frequency of words used in a free-response question, has been created from the survey results (Figure 1). Words like “species,” “sensitive,” “habitat,” and “shoreline” were used most frequently in the free response questions.

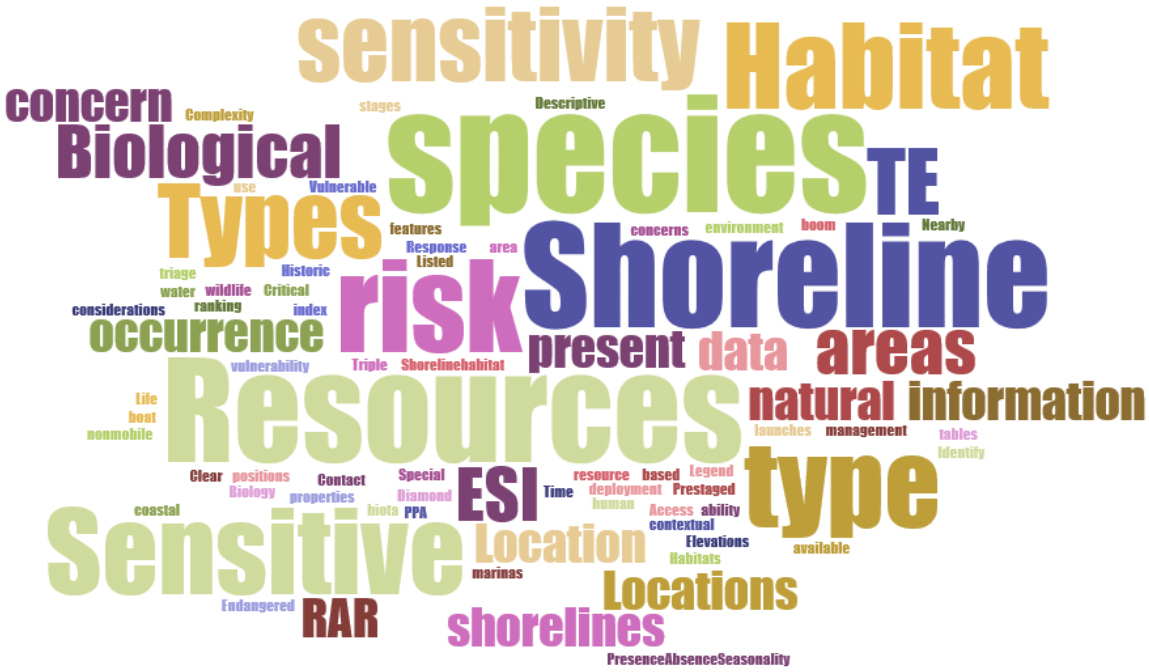


Figure 1. A word cloud representing survey respondents’ first and second priorities for information displayed on ESI maps. Words mentioned more frequently appear larger in the word cloud.

The free response survey results indicate that 2014 survey respondents utilize the ESI maps to extract information about at risk biological elements and shoreline classification primarily, and human use and socio-economic information secondarily.

Biology

Survey results from the previous section suggest that a clear representation of biological resources on the ESI map is important to ESI end users. The biology section of the survey highlights the specific biological features end users expect to see on an ESI atlas. Similar to the “3 Most Important Pieces of

Information" survey section, survey respondents were asked to classify biological attribute information in order of importance. Predefined categories of biological attributes were presented for respondents to rank (1 = most significant; 3 = least significant). The survey results from all three entries were tallied and weighted for each question in order to calculate an overall ranking from most to least significant (Table 1). By an overwhelming margin, respondents ranked the inclusion of threatened, endangered or species of conservation concern as the most important biological attribute to include on the ESI map product. Mapping biological features at a species specific scale ranked as the second highest priority. The third most important feature to include on the ESI map, as identified by survey responses, was the seasonality information indicating the presence or absence of a species in a particular region at a particular point in time.

Table 1. Significance ranking of biological attributes to include on an ESI atlas

Attribute	1st Most Important	2nd Most Important	3rd Most Important	Total (weighted)	Rank
Element	6	3	2	26	**4**
Sub-element	2	5	0	16	**7**
Species Name	9	3	3	36	**2**
T&E Species	15	10	6	71	**1**
Concentration	2	5	9	25	**5**
Seasonal Presence	3	6	8	35	**3**
Life History Stage	2	4	9	23	**6**

A majority of respondents (66%) indicated that a more accurate depiction of species location would improve the utility of the ESI product. Often times state and federal land managers request that locations of threatened and endangered species be buffered or species names be generalized (e.g. “endangered raptor”) in an effort to protect sensitive species from potential poaching or otherwise harm. As ESI maps are made available to the general public, QSI cannot and will not display the precise location of threatened and endangered species occurrences if a data provider or land manager requests the location be buffered or species name obscured. Instead, one suggestion will be that all buffered or name-obscured occurrences will be accompanied by the contact information of the proper state or federal land manager to contact in the event of an oil spill.

A final question in this category asked respondents for their opinions on the possibility of splitting current ESI maps into two separate maps. Responses to this proposal were mixed, with 43% indicating that this would increase the utility of ESI maps and 29% answering that this would decrease the utility. QSI will consider splitting content currently displayed on one ESI map between two maps to prevent congestion of map features, and to facilitate easier interpretation in areas of shoreline and biological resources overlap. One map will contain biological resources and human use features and the other will contain shoreline, habitat and human use features. Human-use features are included on both maps for two reasons. First, these include important reference features that may be relevant to both users of the shoreline map and the biological features map. Second, inclusion of human-use features on both maps can serve as reference points that assist users with matching up content on both maps when required.

Map Configuration

Survey questions in this section relate to the content, design, and inclusion of various map elements displayed on the ESI maps. Questions in this section of the survey are broken into two categories: 1) items to be included as part of the basemap or background information on ESI maps, and 2) the design of typical map elements like title block, scale, and index maps.

In terms of basemap features, survey respondents were asked to rank the importance (1 = not very important; 5 = very important) of four features found on ESI maps: 1) latitude and longitude tick marks, 2) major street names, 3) city names, and 4) water feature names. All four features were ranked as important, with the percentages of respondents that ranked each as a value of 4-5 as follows: latitude

and longitude (66%), major street names (60%), city names (60%), and water feature names (82%). Other potential map features to include on the basemap identified by a similar free-response question included the following:

- Aerial photography
- Nautical charts
- Oil and chemical facilities
- Bathymetry (20-fathom contour)

Additional questions asked for user opinions on how map elements such as the title block, general index map, and the legend are portrayed on current ESI maps as well as possible changes to these elements for future atlas maps. Significant findings in this category indicate that 66% of respondents stressed the importance of including latitude and longitude tick marks on the map. Additionally, respondents showed a preference for either a representative fraction map scale (e.g., 1:24,000), or a linear scale in statute miles.

Respondents were asked to comment on the potential for increasing the size of the map on the printed page. Increasing the mapped area space would necessitate that elements such as the title blocks, legend, index map, and associated text are moved to a single foldout map. Survey results associated with this proposed map layout were supportive; 73% of respondents were not opposed to moving the legend to a separate page while 64% were not opposed to removing the reference map from the main map and moving it to the foldout map page. Based on these responses, QSI is considering a single foldout map layout to display the standard title block and location map information. This map layout would maximize mapped area space on the new atlas maps when compiled on an 8.5” x 11” page. Generally, survey results indicated that using additional page space for the mapped area and possibly having data on 2 separate maps covering the same location would have little or no impact on how end users utilize the ESI maps.

Finally, binding option preferences were explored in the survey. And although there was not a consensus on the way the maps should be bound or the binding method, a majority of survey respondents (52%) requested the hard copy maps either be laminated or otherwise printed on waterproof paper.

General Comments

The general comments section of the survey was divided into the four free-response questions listed below:

1. What do you like the most about the current ESI maps?
2. What do you like least about the current ESI maps?
3. What, if anything, would you like to see added or changed about the current ESI product?
4. Any additional comments?

In an attempt to summarize the free response answers to these four questions, QSI separated the general responses into two separate groups: 1) the "look and feel" of the maps, and 2) the data displayed on the maps.

What do you like the most about the current ESI maps?

Relevant positive comments related to the "look and feel" of the maps include:

- Lamination
- Standard national approach
- Produced as a PDF for end user printing
- Small scale overview
- Loose-leaf binding for page removal

Relevant positive comments related to the data display on the map include:

- Comprehensive biological data
- Seasonality information
- Single data source location
- Defined symbology

What do you like least about the current ESI maps?

Interestingly, in some cases, responses to this question mirrored responses received in the "what do you like most" question.

Relevant negative responses related to the "look and feel" of the maps include:

- The weight of the atlas
- Not field-user friendly
- Inability to sort details

- Too much information displayed on a single map (multiple comments in both the 2012 and 2014 surveys; this sentiment is summed up well by one respondent on the 2012 survey who mentioned that "the problem with ESI maps is that they include 'everything'")

Relevant negative comments related to the data display on the map include:

- Federal lands not clearly defined
- Inadequate frequency of the data updates (multiple comments)
- RAR and RARNUM
- Shows more detail than the data supports
- Color gradations, difficult to determine shoreline classification based off of the legend

What, if anything, would you like to see added or changed about the current ESI product?

This question received the most open-ended responses of any question in the entire survey.

Relevant suggestions related to the "look and feel" of the maps include:

- Layers that can be turned on and off (such as a GeoPDF file) on a soft copy versions of the atlas (multiple comments in both the 2012 and 2014 surveys)
- Migrate the symbology to websites like ERMA
- Simplify the map for Day 0 use, current maps are more focused on academia planning and extended spill response situations
- A scheduled update process
- General emergency response number for immediate atlas shipping
- Improvements to color variations

Relevant suggestions related to the data display on the map include:

- Flood-based data
- Shoreline should be registered to the NOAA CUSP shoreline and should have nautical charts
- Simplify the database structure
- Make individual source data available in alternate data types (e.g., KML)
- Establish a standard format for presenting at risk resources
- Better display of priority areas

Additional comments

Relevant responses for the "look and feel" include:

- Make maps and data accessible in iOS and Android-based applications for tablets and phones
- ESI Tools created in Florida for the Florida Marine Spill Analysis System

- Praise for a job well done, however, don't just change everything for change's sake merely because some of the product is changing

Relevant suggestions related to the data display on the map include:

- Consider creating maps for different use functions, have an environmental reference map and a spill response map showing focused data
- Complimentary value of ESI and GRP's
- Ability to change what is being viewed and the ability to access the full complement of data for features, accessing associated data tables.

Conclusions

The 41 catalogued responses to the survey indicate that ESI maps are utilized by a wide range of end users and for many diverse uses. With this in mind, QSI understands that trying to satisfy 100% of the end user population with one map product would be an impossible task. It is the hope that by eliciting survey responses, OR&R and QSI can better satisfy the majority of the end user groups by producing a product that accomplishes the mission of presenting necessary data in a hard copy format.

With the understanding that ESI maps are used primarily to extract sensitive biological data and shoreline classifications, QSI is focusing the majority of changes towards improving the usability of these two features. Based on survey responses indicating that the complexity of the current ESI maps is a limiting factor in accurate use of the maps, QSI is proposing splitting the data captured within the ESI framework into two distinct maps to be bound concurrently in the hard copy atlas product. This proposed format was received well by survey respondents. Additional support was voiced for extending the mapped area to the full limit of an 8.5" x 11" page. As a byproduct of increasing the mapped area, mapping elements like the title block, legend, and reference index map will need to be eliminated from each individual map page. A master legend and reference index map will be compiled into a single sheet displayed within the first few pages of each atlas volume. This format change seems justified given survey respondents that mentioned the complexity of information displayed on current ESI maps as a limitation.

Moving forward, Quantum Spatial will continue to explore additional ways of displaying the ESI product while closely considering the input gathered from the 2012 and 2014 survey results and direct consultation with OR&R and other collaborators participating in this region wide mapping update.

Appendix: Survey Questions and Results

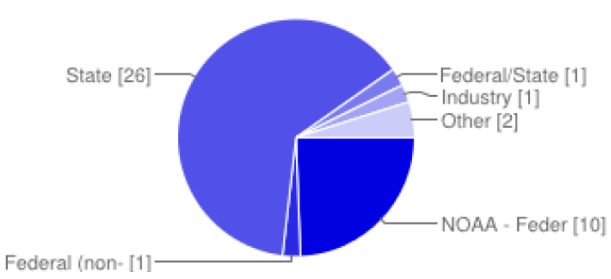
ESI User Survey

How are the hard copy and PDF maps used?

October 1, 2014

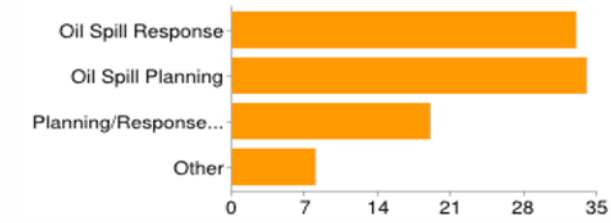
(41 responses)

What is your affiliation?



NOAA - Federal	**10**	23%
Federal (non-NOAA)	**1**	2%
State	**26**	59%
Federal/State contractor	**1**	2%
Industry	**1**	2%
Other	**2**	5%

In what capacity do you use ESI maps? (check all that apply)



Oil Spill Response	**33**	75%
Oil Spill Planning	**34**	77%
Planning/Response for non-spill events	**19**	43%
Other	**8**	18%

Other uses:

general environmental data on NRDA case work
planning/response for all hazards
I work with them to help provide them easily and to help improve them.
A little of all of that but specifically NRDA
R&D
Restoration
Shoreline type/length studies, general species level mapping, ecosystem level studies, getting a "big picture" on regional biology.
They could be helpful for response or planning for natural disasters or other non-spill planning
Hurrican recovery
GRP site selection/prioritization
haz mat
contribute biological information to ESI
habitat identification for conservation
As the Regional Emergency Response Coordinator, I am involved in flooding and other non-spill events.

In the event of a spill, what are the 3 most important pieces of information you hope to extract from the ESI map?

 # 1:

Resources At Risk
Shoreline type
ESI Shoreline/habitat
Access
Species of concern
Species at Risk
Special management areas
Habitat occurrence
Location and type of sensitive species.
Triple Diamond Areas
Elevations
T&E species
Shoreline sensitivity index
Shoreline types (vulnerability)
Habitat type
Sensitivity ranking
Critical habitat for non-mobile biota
RAR
Listed Species Present
Locations of boat launches & marinas
Shoreline types
Habitat type
Location of sensitive resources
Natural resource positions
Sensitive Habitats
Sensitive species
Shoreline types
Biological concerns
ESI Shoreline
RAR Information
Resources at Risk

Shoreline sensitivity
Sensitive areas
Shoreline

 # 2:

Data tables
T/E species
Species occurrence
Response considerations
Resources at Risk PPA
Habitat
Vulnerable species
Endangered Species
Descriptive coastal environment
Contact information
ESI shoreline type
Locations of sensitive human use features
Complexity of natural shorelines
Life stages
Clear Legend
T/E species
Sensitive shorelines
Habitat Type
Species data and sensitivity
Pre-staged boom deployment
Shoreline type
Presence/Absence/Seasonality
Types of wildlife in area
Biology
Time contextual sensitivity.
T&E Species
Habitat
Biological resources
Species of concern
Resources at risk in are

Historic properties
Nearby water resources
Biological species present
What are resources at risk and ability to triage based on available resources
Identify resources at risk
Resources at risk
Shoreline Types

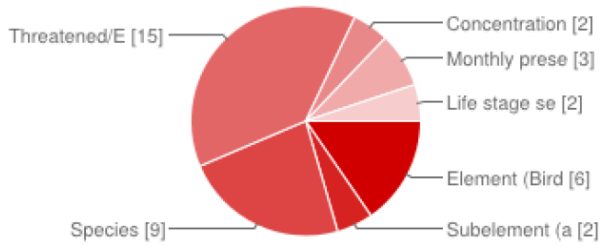
 # 3:

Protection priority
Appropriate areas for spill collection. Not just deflection booming.
Special Managed Areas
Shoreline Habitats
Managed area boundaries
Access points/infrastructure
Shoreline type
Locations of dams, islands, river geography
Correlate appropriate protection/response strategies
Human use resources
General species
Water intakes/shoreline access
Federal lands
Seasonality
Local contacts
Biology
Priority areas
Shoreline type
Other priority areas for protection
Endangered species
Length of ESI types
Threatened/endangered species
Projections for product / trajectories
Currents, bathymetry
Shoreline Type
Accurate Data

Response strategy
Water intakes
Location of resources at risk
At-risk species
Animal information
Access points
Location
Shoreline sensitivity
Shoreline info
Bird data

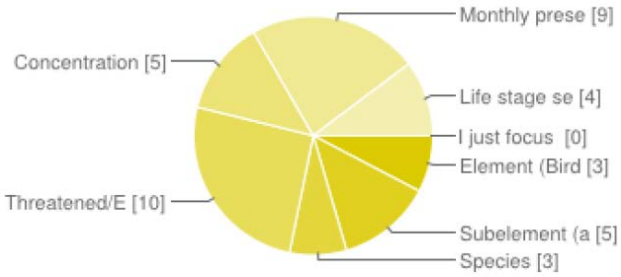
With regard to the biology, what ESI attributes do you focus on when evaluating protection priorities?

 # 1:



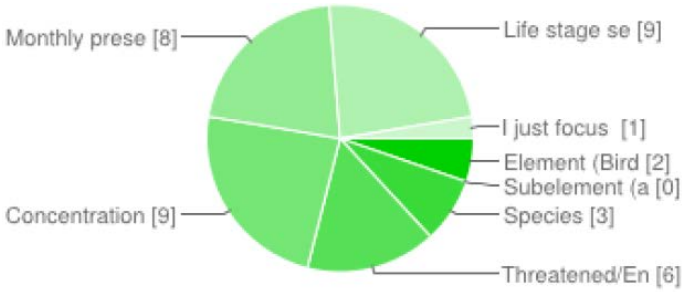
Element (Bird, Fish, Reptile, etc.)	**6**	14%
Subelement (a diivision based on habitat, feeding preferenc etc.), i.e. Wading bird vs. Raptor, Dolphin vs. Whale	**2**	5%
Species	**9**	20%
Threatened/Endangered status	**15**	34%
Concentration	**2**	5%
Monthly presence/absence	**3**	7%
Life stage seasonalities (i.e. nesting Jan-Jul)	**2**	5%

 # 2:



Element (Bird, Fish, Reptile, etc.)	**3**	7%
Subelement (a diivision based on habitat, feeding preferenc etc.), i.e. Wading bird vs. Raptor, Dolphin vs. Whale	**5**	11%
Species	**3**	7%
Threatened/Endangered status	**10**	23%
Concentration	**5**	11%
Monthly presence/absence	**9**	20%
Life stage seasonalities (i.e. nesting Jan-Jul)	**4**	9%

 # 3:

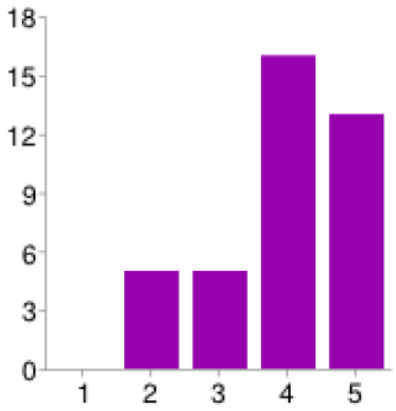


Element (Bird, Fish, Reptile, etc.)	**2**	5%
Subelement (a diivision based on habitat, feeding preferenc etc.), i.e. Wading bird vs. Raptor, Dolphin vs. Whale	**0**	0%
Species	**3**	7%
Threatened/Endangered status	**6**	14%
Concentration	**9**	20%
Monthly presence/absence	**8**	18%
Life stage seasonalities (i.e. nesting Jan-Jul)	**9**	20%
I just focus on my above selection(s)	**1**	2%

Other:

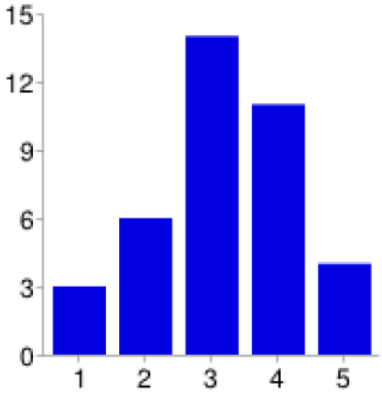
Habitat such as nesting, spawning, etc.
Relative Concentration, Life Stage Seasonalities
habitat associations
Threatened or endangered
Oysters & Submerged Aquatic Vegetation
concentration
Habitat...Nesting, spawning, etc.
Presence/Absence/Seasonality
Species
really depends on many factors
Ability to mitigate/restore habitat / ability of habitat to recover naturally

On a scale of 1-5, how important is it to know the "precise" location on the map for threatened/endangered species? (not important → very important)



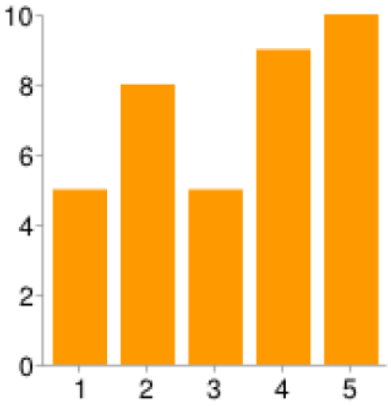
1	**0**	0%
2	**5**	11%
3	**5**	11%
4	**16**	36%
5	**13**	30%

On a scale of 1-5, how important is it to know the "precise" location on the map for non-threatened species? (not important → very important)



1	**3**	7%
2	**6**	14%
3	**14**	32%
4	**11**	25%
5	**4**	9%

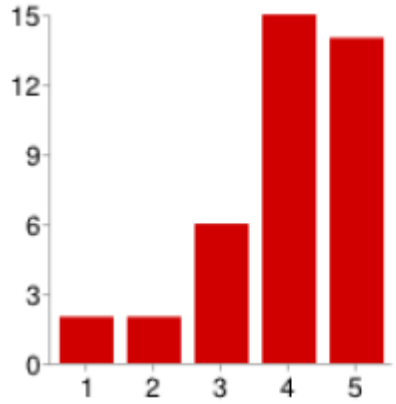
Do you think expanding to 2 maps per area, one showing shoreline and some management features, the second focusing on biology and other human use features would increase or decrease the utility of the ESI map?
(decrease → increase)



1	**5**	11%
2	**8**	18%
3	**5**	11%
4	**9**	20%
5	**10**	23%

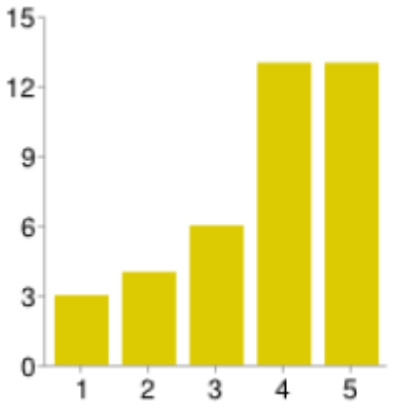
How important is it that the ESI base maps provide reference names and features, such as...

Latitude/Longitude marks? (not very → very)



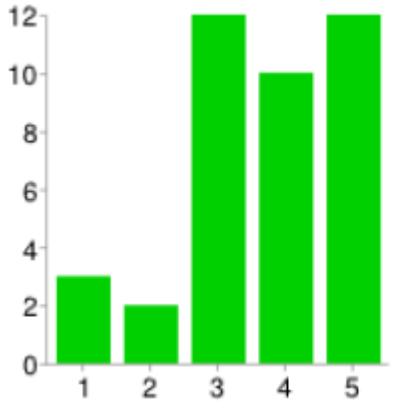
1	**2**	5%
2	**2**	5%
3	**6**	14%
4	**15**	34%
5	**14**	32%

Major street names? (not very → very)



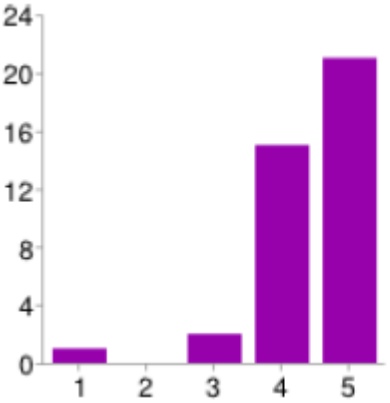
1	**3**	7%
2	**4**	9%
3	**6**	14%
4	**13**	30%
5	**13**	30%

City names? (not very → very)



1	**3**	7%
2	**2**	5%
3	**12**	27%
4	**10**	23%
5	**12**	27%

Water feature names (bays, inlets, etc.) (not very → very)



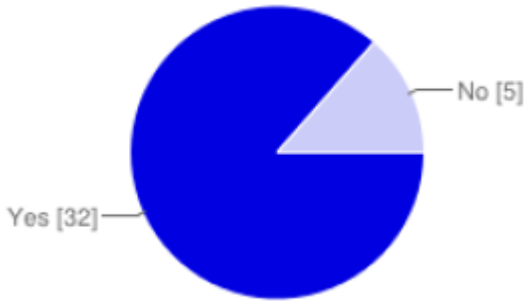
1	**1**	2%
2	**0**	0%
3	**2**	5%
4	**15**	34%
5	**21**	48%

Please specify any other base map features you'd like to see:

Imagery. Oil Terminals. OSRO locations.
State and Federal offices that concern response, etc.
Aids to navigation
A hybrid aerial photography/nautical chart basemap would be nice, or hybrid aerial photography/placename annotation/streets might be helpful for some areas.
possibly ref to grp
habitat
20 fathom contour
waterways (River, creeks &streams)
oil and chemical facilities

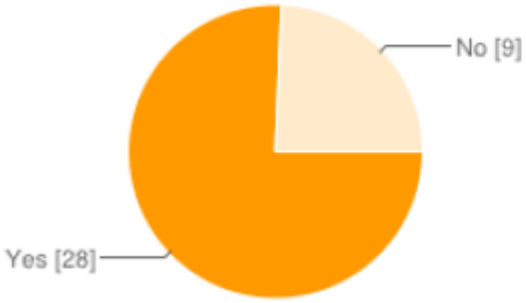
If it meant that the map could be printed at a larger scale, would you be ok with...

Removing the legend from the map page, but retaining the large, fold-out legend?



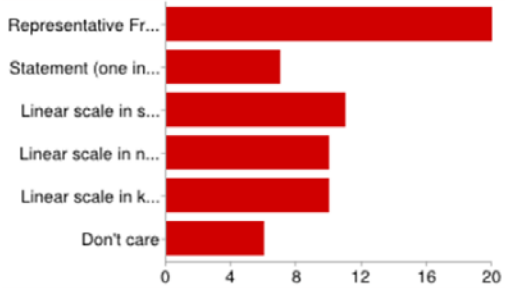
Yes	**32**	73%
No	**5**	11%

Removing the reference map from the map page, and adding a reference map index to the foldout legend page?



Yes	**28**	64%
No	**9**	20%

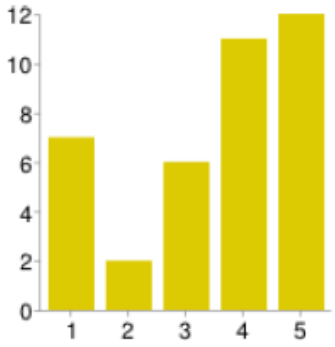
What kind of scale would you prefer on the maps? (can select multiple)



Representative Fraction (1:24,000)	**20**	45%
Statement (one inch = one mile)	**7**	16%
Linear scale in statute miles	**11**	25%
Linear scale in nautical miles	**10**	23%
Linear scale in kilometers	**10**	23%
Don't care	**6**	14%

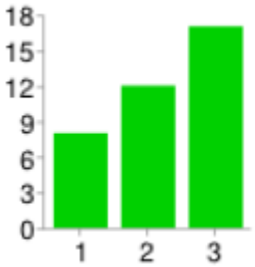
For the hard copy maps, we plan to use an 8.5 x 11 format. With that in mind…

How important is it that maps be laminated or printed on water proof paper? **(not very → very)**



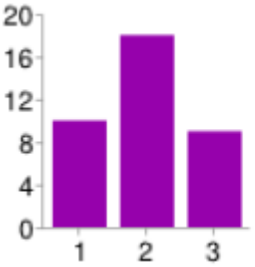
1	**7**	16%
2	**2**	5%
3	**6**	14%
4	**11**	25%
5	**12**	27%

Binding option – loose leaf binder (dislike → like)



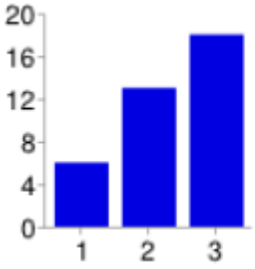
1	**8**	18%
2	**12**	27%
3	**17**	39%

Spiral bound on side (dislike → like)



1	**10**	23%
2	**18**	41%
3	**9**	20%

Spiral bound on top (would possibly allow more room for the map) (dislike → like)



1	**6**	14%
2	**13**	30%
3	**18**	41%

What do you like most about the current ESI maps?

Data layers on ERMA and the ESI query tool
the back of the map data, look of the hardcopy, ability to use tools to search for information (ESI Query)
Small scale overview of area, thorough biological mapping & associated info.
They're a very nice compilation of critical information
A lot of effort goes in to preparing them and, as a result, they are comprehensive. Good work!
Having all the information on one map
updated current info
Standard national approach
Printed on tabloid size, laminated, map on front, biology on back, in a binder that allows one or more page to be removed and taken out into the field. We also very much like the PDF Atlases so that we can print maps on demand and to the size that we want (tabloid to 3 times tabloid for posters at drills, exercises, spills).
EXCELLENT resource
Laminated atlases are easiest to access and use. Being able to access and print as 81/2 x 11 pages as alternative is also helpful.
The shoreline sensitivity ranking
Seasonality information, Single reliable source for the data
Good for quick reference.
the query function for t/e species is perfect ESI provide an easy centralized location for habitat, species, access point and shoreline types. These are crucial items for baseline monitoring and conservation. the ability to over lay with other map layers, hence don't care about printed features too much.
The species information since it is not something we work work in our area of expertise and response considerations.

Digital is the way to go, so I'd like to see you optimize the digital maps. I'd also like to see you focus on the NOS shoreline instead of the USGS quads.
Color coding to see quickly what is important. Amount of detail on the "back page" Total coverage area
That we have them! Natural resource information for the coastline
size
Icons
Ease of shoreline type classification and location, seasonality, and biological information of resources and human uses. The use of bright colors and easy to understand icons.
The standard structure of the data
Overall map gives a great overview. The map is detailed enough to find important information, fairly quickly. Place names and point of reference are also very helpful.
Tons of great information packed in.
The loose leaf binding because I can pull out the pages I need along with the legend and have the information I need without have the entire bulky book.

What do you like least about the current ESI maps?

Federal (and other managed) lands are not clearly delineated sometimes.
The Maps have so much information they can be difficult and overwhelming to read.
Small scale, too much info overall, but not enough info on human use features. I understand we're using the ESI maps out of context when we use them in spill response, but unfortunately there's little or nothing else available to fill the spill response map gap for identifying and prioritizing response strategies.
Fairly content with the overall map.
Inability to sort details as is possible in GIS based maps. In on sense, there's too much information on the page. In another, the details associated with each labeled feature are not robust.
Some datasets may be updated more frequently than the ESI maps can be revised. I'd suggest reducing the need to repackage/reformat existing datasets; attempt to import them in their native format. Perhaps this will expedite their incorporation.
That they are so tied to a printable atlas version.
they are usually several years out of date and should be updated more often
geographic boundaries for pdfs (I want to be able to choose my own area regardless of which atlas it falls into)
update frequency
Sometimes, in areas with lots of informatin, the base maps can be a little difficult to see
RARNUM!

Can't always find what I need. And when I do I can't print them out because I don't have a color printer. I like the hard copies.
Using ESI Maps as files from CD, have to go into multiple folders to access index, map and corresponding seasonality pages.
Tending to get over busy and shows somewhat more detail than data supports.
The "RAR" concept. So much of the biological information is lumped together that it is very difficult to pick out priority areas.
I think the 8.5 x 11 size will be less cumbersome than the 11 x 17 size.
Weight of the atlases.
That they are SO OLD and that they are SO EXPENSIVE to UPDATE!!! We have two atlases of 6 in the state revised yet we do not have one single new ESI map available in either hardcopy or PDF format. We could produce ESI cartographic products in house if we were to find funding to support that effort but then we would be producing something outside of a "standard" NOAA product. We do however, maintain all of the "ESI Standard" cartographic symbology for each of the various ESI layers for use in both Geographic Response Plans and the Florida Marine Spill Analysis System. The current ESI maps could be improved if they were GeoPDFs/Layered PDFs and could be printed using a few different "custom" background maps.
The weight of the atlas. In some cases need a hand truck to carry.
1. Large format, not field use friendly 2. Sheer volume of data crammed into maps 3. Cost to update data 4. Cost prohibitive to update maps/data on a scheduled basis
The scale because somethings get a little difficult make out on the shoreline when there are multiple layers of the shoreline type moving towards the shore and biological resources together (example- St. Johns River, FL, STJ-3 where you have mud flats the goes into marshes with shellfish).
Data update schedule
Color gradations have always been difficult to verify/differentiate with legend. More frequently updated to reflect development and nuances of ecosystems i.e. - seagrass beds flourish and famine periods.
Out of date Lack of coverage for important areas
Data is dated, and does not reflect local knowledge or input. The final maps are obviously an interpretation of information, but the process used to translate information to the map is not very transparent. By comparison, a mapping approach like ShoreZone provides a mapping output but also allows the user to browse the imagery from which the maps are derived. ESI lacks this dimension.
The cartography of all biological features. We like the specie icons to relate to biology tables.

What, if anything, would you like to see added or changed about the current ESI product?

Include flood surge zones.
On an electronic version, layers that can be turned on and off.
I'd like to see the ability to add updates by layer vs by atlas, thus ESI updates wouldn't be so out of date.
I'd like to be able to pull the symbology into ERMA.
shoreline should be better integrate with NOAA CUSP shoreline and nautical charts
Focus on species habitat associations. Many organisms featured in the maps are transient and occurrence data are lacking. particularly for imperiled species. Habitats, however, are relatively static. Associations among species and habitats are often well-known and could therefore be used to complement occurrence data. E.g., coral reefs and seagrass and the associated fauna.
Updated on a schedule. One atlas we use regularly is now 16 years old (1998).
better update frequency
Color variations improved for easier definition. Numbered/named the same as GRP maps? In large grid show the submaaps so more easy and fast to target areas being utilized/researched. A summary of what maps are in each quadrant and consistent naming for both products which are often used interchangeably. If removing legend from map on digital version production make direct link to the legend for production of deliverables.
Look more like the Texas version of ESI maps.
Priorities in some way shape or form would be helpful.
If possible, better delineation of federal/managed lands and jurisdictions. This can be gotten from other sources if it will add too much clutter, though.
Build more tools for the spatial analysis of ESI GIS data and textual analysis reporting. Most helpful would be a "back of the map tool" that would generate a "back of the map" table based upon a given map extent. Said tool could also generate "present throughout" map icons for the data frame view. Build more tools for the production of cartographic products from ESI GIS data. Map annotation layers and "pinned/rotating" leader lines would be a huge help in speeding up the cartographic production effort.
The product is great for environmental sensitivity analysis, which has always been the focus and intent. However, the adoption of the ESI maps by oil spill response organizations has led to more scrutiny on the utility of these ESI maps for spill response purposes. ESI maps are good for academic planning, and would be useful for major oil spills having an extended response and cleanup timeframe. But for day 0 spill response use, a more intuitive, simplified map showing where sensitive resources (not just environmental) could be more useful.
Would like to see the database structure simplified and have the ability to update.
It would be nice if the source data was available to layer into other geospatial data management programs, e.g. Google Maps. It would also be useful to have more readily available information about the

data source. When we bring ESI maps to local stakeholder meetings for GRP development, there is often a disconnect between local conservation atlases and the ESI maps. ESI data is also presented in a fairly static, one-size-fits-all format. It would be nice for users to be able to explore and query more freely. See, for example, this atlas in BC. http://bcmca.ca/maps-data/browse-or-search/
Availability of data in GIS format (which we have for some areas, like the Columbia) More frequent update Establish as a standard format for presenting resources at risk information in GISs that can be built upon to create GRPs and other planning documents Expand to include other important waterways
Digital Geopdf version in which you can turn on/off layers
I would like the icon/number to be hot linked to the data
I would like to see nautical chart info included.
Let me know who I can contact at the last minute (when a spill occurs!) so that someone can FEDEX (a hard colored copy) to me. I really don't know who I should talk to and who would have time to do at the start of an event.

Any additional comments?

I would like to see the maps go out to State water boundaries.
A GPS based app for a smart phone could be useful
When asking about precision, this answer varies greatly by species. For something like sawfish or shorebirds, precision is not even possibly. For things like endemic spring biota, precision may be known and critical. smartphone apps for both iphone and android.
My greatest desire is for a GIS/ESRI based product where I can turn features like bird species and/or booming locations on and off. Also, ability to click on a feature and bring up a data table. Ability to search data table and display species that are sensitive at the actual time of the incident (molting bird species, migratory species, nesting concerns that are critical only during a specific time frame, etc.) I would also like to see more information the recoverability of habitats, as well as cleanup urgency. For instance, oiling of a rocky shore may be a habitat concern, but quickly cleaning an area with certain wetland vegetation may be more critcal for the long term survival of the habitat.
Seasonality & life cycles is important information, however this same info might be relayed more intuitively by ONLY listing species that are threatened & endangered, and ONLY the months when those species are present and/or especially critical life cycles. Bluegills being present in the river all year long is not especially useful info. But being able to identify and then prioritize protection of endangered species concentration areas would be much more useful. I suggest not cluttering the ESI maps with common species. OR, keeping the ESI maps as environmental reference maps, and creating a more immediate Spill Response Map product for those purposes.
thanks!

Need to think about complimentary value of GRPs along with ESI
Thanks for asking!
Ask me about the new ESI tools built for the Florida Marine Spill Analysis System. They can handle spatial analysis on multiple formats of ESI data as well as analysis and reporting on non-ESI geodata. We have also been recently somewhat successful in deploying an ESRI map service with full ESI biology and tables exposed as REST endpoints and a map service awating the development of an application wrapper.
It is great information that helps us with the establishement of GRPs
Thanks for asking....3 times;-)
A useful product for spill, drill and training purposes.
This questionnaire seems very focused on static, print maps. I think that many end users may be more interested in the geospatial data and opportunities to explore/apply it. Mapping has evolved significantly since ESI was first created.
Don't throw the baby out with the bathwater.
As a non-standard user, I don't have enough experience with the maps to provide answers to many of these questions.
ESI map app on different OS platforms viewable on phone or tablet
Thank you for requesting input
It is a very useful tool to have especially if you are working in a deployment area you are not familiar with.
Good job. Thank you for allowing me to take this survey. You guys produce great work and products.