

National Marine Fisheries Service
Recommendations for the Contents of
Biological Assessments and Biological Evaluations
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When preparing a Biological Assessment (BA) or Biological Evaluation (BE), keep in mind that the people who read or review this document may not be familiar with the project area or what is proposed by the project. Therefore your BA or BE should present a clear line of reasoning that explains the proposed project and how you determined the effects of the project on each threatened or endangered species, or critical habitat, in the project area. Try to avoid technical jargon not readily understandable to people outside your agency or area of expertise. Remember, this is a **public document**. Some things to consider and, if appropriate, to include in your BA or BE, follow.

1. What is the difference between a Biological Evaluation and a Biological Assessment?

By regulation, a Biological Assessment is prepared for “major construction activities” — defined as “a construction project (or other undertaking having similar physical effects) which is a major Federal action significantly affecting the quality of the human environment (as referred to in the National Environmental Policy Act of 1969 (NEPA) [(42 U.S.C. 4332(2)(C))].” A BA is required if listed species or critical habitat may be present in the action area. A BA also may be recommended for other activities to ensure the agency’s early involvement and increase the chances for resolution during informal consultation. Recommended contents for a BA are described in 50 CFR 402.12(f).

Biological Evaluation is a generic term for all other types of analyses in support of consultations. Although agencies are not required to prepare a Biological Assessment for non-major construction activities, **if a listed species or critical habitat is likely to be affected, the agency must provide the Service with an evaluation on the likely effects of the action.** Often this information is referred to as a BE. The Service uses this documentation along with any other available information to decide if concurrence with the agency’s determination is warranted. Recommended contents are the same as for a BA, as referenced above.

The BAs and BEs should not be confused with Environmental Assessments (EA) or Environmental Impact Statements (EIS) which may be required for NEPA projects. These EAs and EISs are designed to provide an analysis of multiple possible alternative actions on a variety of environmental, cultural, and social resources, and often use different definitions or standards. However, if an EA or EIS contains the information otherwise found in a BE or BA regarding the project and the potential impacts to listed species, it may be submitted in lieu of a BE or BA.

2. What are you proposing to do?

Describe the project. A project description will vary, depending on the complexity of the project. For example, describing the construction or removal of a fixed aid-to-navigation in the Intracoastal Waterway, or the abandonment/dismantling of an oil-producing-platform may be relatively simple, but describing the extent and amplitude of potential impacts of military training exercises involving different military assets, combinations of weaponry, locations, and seasons would necessarily be more detailed and complex. Include figures and tables if they will help others understand your proposed action and its relationship with the species’ habitat.

How are you (or the project proponent) planning on carrying out the project? What tools or methods may be used? How will the site be accessed? When will the project begin, and how long will it last?

Describe the “action area” (all areas to be affected directly or indirectly by the Federal action and not merely the immediate areas involved in the action [50 CFR 402.02]). Always include a map (topographic maps are particularly helpful). Provide photographs including aerials, if available. Describe the project area (i.e., topography, vegetation, condition/trend).

Describe current management or activities relevant to the project area. How will your project change the area?

Supporting documents are very helpful. If you have a blasting plan, best management practices document, sawfish/sea turtle/sturgeon conservation construction guidelines, research proposal, NEPA or other planning document or any other documents regarding the project, attach them to the BA or BE.

3. What threatened or endangered species, or critical habitat, may occur in the project area?

A request for a species list may be submitted to the Service, or the Federal action agency or its designated representative may develop the list. If you have information to develop your own lists, the Service should be contacted periodically to ensure that changes in species’ status or additions/deletions to the list are included. Sources of biological information on federally-protected sea turtles, sturgeon, Gulf sturgeon (and Gulf sturgeon critical habitat), and other listed species and candidate species can be found at the following website addresses: NMFS Southeast Regional Office, Protected Resources Division (<http://sero.nmfs.noaa.gov/pr/protres.htm>); NMFS Office of Protected Resources (<http://www.nmfs.noaa.gov/pr/species>); U.S. Fish and Wildlife Service (<http://noflorida.fws.gov/SeaTurtles/seaturtle-info.htm>); <http://www.nmfs.noaa.gov/pr/>; <http://www.sad.usace.army.mil/protected%20resources/turtles.htm>; <http://endangered.fws.gov/wildlife.html#Species>; the Ocean Conservancy (<http://www.cmc-ocean.org/main.php3>); the Caribbean Conservation Corporation (<http://www.ccturtle.org/>); Florida Fish and Wildlife Conservation Commission (<http://floridaconservation.org/psm/turtles/turtle.htm>); <http://www.turtles.org>; <http://www.seaturtle.org>; <http://alabama.fws.gov/gs/>; http://obis.env.duke.edu/data/sp_profiles.php; www.mote.org/~colins/Sawfish/SawfishHomePage.html; www.floridasawfish.com; <http://www.flmnh.ufl.edu/fish/Sharks/sawfish/srt/srt.htm>; www.flmnh.ufl.edu/fish/sharks/InNews/sawprop.htm; also, from members of the public or academic community, and from books and various informational booklets. Due to budget constraints and staff shortages, we are only able to provide general, state-wide, or country-wide (territory-wide) species lists.

Use your familiarity with the project area when you develop your species lists. Sometimes a species may occur in the larger regional area near your project, but the habitat necessary to support the species is not in the project area (including areas that may be beyond the immediate project boundaries, but within the area of influence of the project. If, for example, you know that the specific habitat type used by a species does not occur in the project area, it does not need to appear on the species list for the project. However, documentation of your reasoning is helpful for Service biologists or anyone else that may review the document.

4. Have you surveyed for species that are known to occur or have potential habitat in the proposed project area?

The “not known to occur here” approach is a common flaw in many BA/BEs. The operative word here is “known.” Unless adequate surveys have been conducted or adequate information sources have been referenced, this statement is difficult to interpret. It begs the questions “Have you looked?” and “How have you looked?” Always reference your information sources.

Include a clear description of your survey methods so the reader can have confidence in your results. Answer such questions as:

How intensive was the survey? Did you look for suitable habitat or did you look for individuals? Did the survey cover the entire project area or only part of it? Include maps of areas surveyed if appropriate.

Who did the surveys and when? Was the survey done during the time of year/day when the plant is growing or when the animal can be found (its active period)? Did the survey follow accepted protocols?

If you are not sure how to do a good survey for the species, the Service recommends contacting species experts. Specialized training is required before you can obtain a permit to survey for some species.

Remember that your evaluation of potential impacts from a project does not end if the species is/are not found in the project area. You must still evaluate what effects would be expected to the habitat, even if it is not known to be occupied, because impacts to habitat that may result indirectly in death or injury to individuals of listed species would constitute “take”.

5. Provide background information on the threatened or endangered species in the project area.

Describe the species in terms of overall range and population status. How many populations are known? How many occur in the project area? What part of the population will be affected by this project? Will the population’s viability be affected? What is the current habitat condition and population size and status? Describe related items of past management for the species, such as stocking programs, habitat improvements, or loss of habitat or individuals caused by previous projects.

6. How will the project affect the threatened or endangered species or critical habitat that occur in the project area?

If you believe the project will not affect the species, explain why. Effects analyses must include evaluating whether adverse impacts to species’ habitats, whether designated or not, could indirectly harm or kill listed species.

If you think the project may affect the species, explain what the effects might be. The Endangered Species Act requires you consider all effects when determining if an action funded, permitted, or carried out by a Federal agency may affect listed species. Effects you must consider include direct, indirect, and cumulative effects. Effects include those caused by interrelated and interdependent actions, not just the proposed action. Direct effects are those caused by the action and occur at the same time and place as the action. Indirect effects are caused by the action and are later in time but are reasonably certain to occur. Interrelated actions are those that are part of a larger action and depend on the larger action for their justification. Interdependent actions are those that have no significant independent utility apart from the action under consideration. Interrelated or interdependent actions can include actions under the jurisdiction of other federal agencies, state agencies, or private parties. Cumulative effects are those effects of future State or private activities, not involving Federal activities, that are reasonably certain to occur within the action area of the Federal actions subject to consultation.

Describe measures that have or will be taken to avoid or eliminate adverse effects or enhance beneficial effects to the species. Refer to conversations you had with species experts to achieve these results.

Consider recovery potential if the project area contains historic range for a species.

Evaluate impacts to designated critical habitat areas by reviewing any project effects to the physical or biological features essential to the conservation of the species.

7. What is your decision? The Federal action agency must make a determination of effect.

Quite frequently, effect determinations are not necessarily *wrong*; they simply are not justified in the assessment. The assessment should lead the reviewer through a discussion of effects to a logical, well-supported conclusion. Do not assume that the Service biologist is familiar with the project and/or its location and that there is no need to fully explain the impact the project may have on listed species. If there is little or no connection or rationale provided to lead the reader from the project description to the effect determination, we cannot assume conditions that are not presented in the assessment. Decisions must be justified biologically. The responsibility for making and supporting the determination of effect falls on the Federal action agency; however, the Service cannot merely “rubber stamp” the action agency’s determination and may ask the agency to revisit its decision or provide more data if the conclusion is not adequately supported by biological information.

You have three choices for each listed species or area of critical habitat:

1. “No effect” is the appropriate conclusion when a listed species will not be affected, either because the species will not be present or because the project does not have any elements with the potential to affect the species. “No effect” does not include a *small* effect or an effect that is *unlikely* to occur: if effects are insignificant (in size) or discountable (extremely unlikely), a “may affect, but not likely to adversely affect” determination is appropriate. A “no effect” determination does **not** require written concurrence from the Service and ends ESA consultation requirements unless the project is subsequently modified in such manner that effects may ensue.
2. “May affect - is not likely to adversely affect” (NLAA) means that all effects are either beneficial, insignificant, or discountable. Beneficial effects have concurrent positive effects without any adverse effects to the species or habitat (i.e., there cannot be “balancing,” wherein the benefits of the project would be expected to outweigh the adverse effects - see #3 below). Insignificant effects relate to the magnitude or extent of the impact (i.e., they must be small and would not rise to the level of a take of a species). Discountable effects are those extremely unlikely to occur. Based on best judgment, a person would not: (1) be able to meaningfully measure, detect, or evaluate insignificant effects; or (2) expect discountable effects to occur. A “NLAA” determination by the action agency requires **written** concurrence from the Service.
3. “May affect - is likely to adversely affect” means that all adverse effects cannot be avoided. A combination of beneficial and adverse effects is still “likely to adversely affect,” even if the net effect is neutral or positive. Adverse effects do not qualify as discountable simply because we are not certain they will occur. The probability of occurrence must be extremely small to achieve discountability. Likewise, adverse effects do not meet the definition of insignificant because they are less than major. If the adverse effect can be detected in any way or if it can be meaningfully articulated in a discussion of the results, then it is not insignificant, it is likely to adversely affect. This requires formal consultation with the Service.

A fourth finding is possible for proposed species or proposed critical habitat:

4. “Is likely to jeopardize/destroy or adversely modify proposed species/critical habitat” is the appropriate conclusion when the action agency identifies situations in which the proposed action is likely to jeopardize a species proposed for listing, or destroy or adversely modify critical habitat proposed for designation. If this conclusion is reached, conference is required.

List the species experts you contacted when preparing the BE or BA but avoid statements that place the responsibility for the decision of “may affect” or “no effect” on the shoulders of the species experts. Remember, this decision is made by the Federal action agency.

Provide supporting documentation, especially any agency reports or data that may not be available to the Service. Include a list of literature cited.

Originally prepared: January 1997
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Revised: January 2006
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OUTLINE EXAMPLE FOR A BIOLOGICAL ASSESSMENT OR BIOLOGICAL EVALUATION

Cover Letter - **VERY IMPORTANT** - Include purpose of consultation, project title, and consultation number (if available). A determination needs to be made for each species and for each area of critical habitat. You have three options: 1) a “no effect” determination; 2) request concurrence with an “is not likely to adversely affect” determination; 3) make a “may affect, is likely to adversely affect” determination, and request “formal” consultation. If proposed species or critical habitat are included, state whether the project is likely to result in jeopardy to proposed species, or the destruction or adverse modification of proposed critical habitat. If the critical habitat is divided into units, specify which critical habitat unit(s) will be affected.

Attached to Cover Letter: Biological Assessment or Biological Evaluation document, broken down as follows:

Title: e.g., BA (or BE) for “Project X”; date prepared, and by whom.

A. Project Description - Describe the proposed action and the action area. Be specific and quantify whenever possible.

For Each Species:

1. Description of affected environment (quantify whenever possible)
2. Description of species biology
3. Describe current conditions for each species
 - a. Range-wide
 - b. In the project area
 - c. Cumulative effects of State and private actions in the project area
 - d. Other consultations of the Federal action agency in the area to date
4. Describe critical habitat (if applicable)
5. Fully describe effects of proposed action on each species and/or critical habitat, and species’ response to the proposed action.
 - a. Direct effects
 - b. Indirect effects
 - c. Interrelated and interdependent actions
 - d. Potential incidental take resulting from project activities

Factors to be considered/included/discussed when analyzing the effects of the proposed action on each species and/or critical habitat include: 1) Proximity of the action to the species, management units, or designated critical habitat units; 2) geographic area(s) where the disturbance/action occurs; timing (relationship to sensitive periods of a species’ lifecycle; 3) duration (the effects of a proposed action on listed species or critical habitat depend largely on the duration of its effects); 4) disturbance frequency (the mean number of events per unit of time affects a species differently depending on its recovery rate); 5) disturbance intensity (the effect of the disturbance on a population or species as a function of the population or species’ state after the disturbance); 6) disturbance severity (the effect of a disturbance on a population or species or habitat as a function of recovery rate – i.e., how long will it take to recover)

6. Conservation Measures (protective measures to avoid or minimize effects for each species)
7. Conclusions (effects determination for each species and critical habitat)
8. Literature Cited
9. Lists of Contacts Made/Preparers
10. Maps/Photographs

Guidance on Preparing an Initiation Package for Endangered Species Consultation

This document is intended to provide general guidance on the type and detail of information that should be provided to initiate consultation with U.S. Fish and Wildlife Service (USFWS) and/or National Marine Fisheries Service (NMFS). This is not intended to be an exhaustive document as specific projects may require more or less information in order to initiate consultation. Also, note that this contains guidance on the information required to initiate formal consultation procedures with USFWS and/or NMFS. Additional information needs may be identified during consultation. Texts in italics below are examples. Normal text is guidance. A glossary of terms is appended.

INTRODUCTION

Here is an example of introductory language:

The purpose of this initiation package is to review the proposed [project name] in sufficient detail to determine to what extent the proposed action may affect any of the threatened, endangered, proposed species and designated or proposed critical habitats listed below. In addition, the following information is provided to comply with statutory requirements to use the best scientific and commercial information available when assessing the risks posed to listed and/or proposed species and designated and/or proposed critical habitat by proposed federal actions. This initiation package is prepared in accordance with legal requirements set forth under regulations implementing Section 7 of the Endangered Species Act (50 CFR 402; 16 U.S.C. 1536 (c)).

Threatened, Endangered, Proposed Threatened or Proposed Endangered Species

Example language:

The following listed and proposed species may be affected by the proposed action:

*common name (Scientific name) **T***

*common name (Scientific name) **E***

*common name (Scientific name) **PT***

*common name (Scientific name) **PE***

This list should include all of the species from the species lists you obtained from USFWS and NMFS. If it doesn't, include a brief explanation here and a more detailed explanation in your record to help USFWS, NMFS and future staff understand your thought process for excluding a species from consideration.

Critical Habitat

Example language:

The action addressed within this document falls within Critical Habitat for [identify species].

CONSULTATION TO DATE

“Consultation” under the ESA consists of discussions between the action agency, the applicant (if any), and USFWS and/or NMFS. It is the sharing of information about the proposed action and related actions, the species and environments affected, and means of achieving project purposes while conserving the species and their habitats. Under the ESA, consultation can be either informal or formal. Both processes are similar, but informal consultation may result in formal consultation if there is a likelihood of unavoidable take. Formal consultation has statutory timeframes and other requirements (such as the submission of the information in this package and a written biological opinion by USFWS or NMFS).

Summarize any consultation that has occurred thus far. Identify when consultation was requested (if not concurrent with this document). Be sure to summarize meetings, site visits and correspondence that were important to the decision-making process.

DESCRIPTION OF THE PROPOSED ACTION

The purpose of this section is to provide a clear and concise description of the proposed activity and any interrelated or interdependent actions.

The following information is necessary for the consultation process on an action:

1. The action agency proposing the action.
2. The authority(ies) the action agency will use to undertake, approve, or fund the action.
3. The applicant, if any.
4. The action to be authorized, funded, or carried out.
5. The location of the action.
5. When the action will occur, and how long it will last.
6. How the action will be carried out
7. The purpose of the action.
8. Any interrelated or interdependent actions, or that none exist to the best of your knowledge.

Describe and specify: **WHO** is going to do the action and under what authority, include the name and office of the action agency and the name and address of the applicant; **WHAT** the project or action is; **WHERE** the project is (refer to attached maps); **WHEN** the action is going to take place, including time line and implementation schedules; **HOW** the action will be accomplished, including the various activities that comprise the whole action, the methods, and the types of equipment used; **WHY** the action is proposed, including its purpose and need; and **WHAT OTHER** interrelated and interdependent actions are known. This combination of actions are what is being consulted on for the 7(a)(2) analysis.

Include a clear description of all conservation measures and project mitigation such as avoidance measures, seasonal restrictions, compensation, restoration/creation (on-site and in-kind, off-site and in-kind, on-site and out-of-kind, off-site and out-of-kind), and use of mitigation or conservation banks.

Here are some examples of commonly overlooked items to include in your project description:

Type of project

Project location

Project footprint

Avoidance areas

Start and end times

Construction access

Staging/laydown areas

Construction equipment and techniques

Habitat status on site

Habitat between work areas and endangered species locations

Permanent vs. temporary impacts

Surrounding land-use
Hydrology and drainage patterns
Duration of “temporary” impacts
Prevailing winds and expected seasonal shifts
Restoration areas
Conservation measures
Compensation and set-asides
Bank ratios and amounts
Mitigation: what kind and who is responsible?
Dust, erosion, and sedimentation controls
Whether the project is growth-inducing or facilitates growth
Whether the project is part of a larger project or plan
What permits will need to be obtained

Action Area

Describe all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action. This includes any interrelated and interdependent actions. Remember that the action area is not based simply on the Federal action and should not be limited to the location of the Federal action. The same applies to the applicant’s action. The action area is defined by measurable or detectable changes in land, air and water, or to other measurable factors that may elicit a response in the species or critical habitat.

To determine the action area, we recommend that you first break the action down into its components (*e.g.*, vegetation clearing, construction of cofferdams, storage areas, borrow areas, operations, maintenance, etc.) to assess the potential impacts resulting from each component.

Determine the impacts that are expected to result from each component. For example, instream actions may mobilize sediments that travel downstream as increased turbidity and then settle out as sediments on the stream substrate. Sound levels from machinery may be detectable hundreds of feet, thousands of feet, or even miles away. Use these distances when delineating the extent of your action area. Note: don’t forget to subsequently reconstruct the action to assess the combined stressors of the components. You may find that some stressors are synergistically minimized or avoided, whereas other stressors may increase.

Finally, describe the action area, including features and habitat types. Include photographs and an area map as well as a vicinity map. The vicinity map for terrestrial projects should be at a 1:24,000 scale with the USGS quad name included.

SPECIES ACCOUNTS AND STATUS OF THE SPECIES IN THE ACTION AREA

Provide local information on affected individuals and populations, such as presence, numbers, life history, etc. Identify which threats to the species’ persistence identified at the time of listing are likely to be present in the action area. Identify any additional threats that are likely to be present in the action area.

If the species has a distribution that is constrained by limiting factors, identify where in the action area factors are present that could support the species and where they are absent or limiting. For example, if a species is limited to a narrow thermal range and a narrow humidity range, show where in the action area

the temperatures are sufficient to support the species, where the humidity is sufficient to support the species, and where those areas overlap.

Include aspects of the species' biology that relate to the impact of the action, such as sensitivity to or tolerance of: noise, light, heat, cold, inundation, smoke, sediments, dust, etc. For example, if the species is sensitive to loud sounds or vibration, and your project involves loud tools or equipment, reference that aspect of their biology. Include citations for all sources of information

Describe habitat use in terms of breeding, feeding, and sheltering. Describe habitat condition and habitat designations such as: critical habitat (provide unit name or number, if applicable), essential habitat, important habitat, recovery area, recovery unit (provide unit name or number, if applicable). Also discuss habitat use patterns, including seasonal use and migration (if relevant), and identify habitat needs.

Identify and quantify the listed-species habitat remaining in the action area. GIS layers are useful here, as are land ownership patterns--especially local land trusts and open space designations.

Identify any recovery plan implementation that is occurring in the action area, especially priority one action items from recovery plans.

Include survey information. For all monitoring and survey reports, please clearly identify how it was done, when, where, and by whom. If survey protocols were followed, reference the name and date of the protocol. If survey protocols were modified, provide an explanation of how the surveying occurred and the reasoning for modifying the protocol.

Keep it relevant. It is unnecessary to discuss biology that is totally unrelated to project impacts--*e.g.*, discussion of pelage color, teat number, and number of digits fore and aft when the project is a seasonal wetland establishment.

Utilize the best scientific and commercial information available. Use and cite recent publications/journal articles/agency data and technical reports. Include local information, relative to the action area, views of recognized experts, results from recent studies, and information on life history, population dynamics, trends and distribution. Reference field notes, unpublished data, research in progress, etc.

Things to consider:

- Existing threats to species

- Fragmentation

- Urban growth area

- Drainage patterns

- Information on local sightings and populations

- Population trends

- Home range and dispersal

- Sensitivity of endangered species to: dust, noise, heat, desiccation, etc.

- Trap stress/mortality

- Predators

ENVIRONMENTAL BASELINE AND CUMULATIVE EFFECTS

Provide information on past, present and future state, local, private, or tribal activities in the action area: specifically, the positive or negative impacts those activities have had on the species or habitat in the area in terms of abundance, reproduction, distribution, diversity, and habitat quality or function. Include the impacts of past and present federal actions as well. Don't forget to describe the impacts of past existence and operation of the action under consultation (for continuing actions).

Cumulative effects include the effects of future State, Tribal, local or private actions that are reasonably certain to occur in the action area. Future Federal actions that are unrelated (*i.e.*, not interrelated or interdependent) to the proposed action are not considered in this analysis because they will be subject to separate consultation pursuant to section 7 of the Act. (Note: Cumulative effects under ESA are ***not*** the same as the definition under NEPA. Be careful not to mix them up.) Describe the impacts of these cumulative effects in terms of abundance, reproduction, distribution, diversity, and habitat quality or function.

Present all known and relative effects to population, *e.g.*, fish stocking, fishing, hunting, other recreation, illegal collecting, private wells, development, grazing, local trust programs, etc. Include impacts to the listed and proposed species in the area that you know are occurring and that are unrelated to your action-- *e.g.*, road kills from off-road vehicle use, poaching, trespass, etc.

EFFECTS OF THE ACTION

The purpose of this section is to document your analysis of the potential impacts the proposed action will have on species and/or critical habitats. This analysis has two possible conclusions for listed species and designated critical habitat:

(1) May Affect, Not Likely to Adversely Affect – the appropriate conclusion when effects on a listed species are expected to be *discountable*, *insignificant*, or completely *beneficial*.

Beneficial effects – contemporaneous positive effects without any adverse effects

Insignificant effects – relate to the size of the impact and should never reach the scale where take would occur.

Discountable effects – those that are extremely unlikely to occur. Based on best judgment, a person would not: (1) be able to meaningfully measure, detect, or evaluate insignificant effects; or (2) expect discountable effects to occur.

(2) May Affect, Likely to Adversely Affect – the appropriate finding if *any* adverse effect may occur to listed species or critical habitat as a direct or indirect result of the proposed action or its interrelated or interdependent actions, and the effect is not discountable, insignificant, or beneficial.

A finding of “may affect” is the primary trigger for initiating section 7 consultation. Further analysis leads to one of the two conclusions above. In the case of a determination that an action is “not likely to adversely affect” a species or critical habitat, you can request USFWS and/or NMFS concurrence with this determination and consultation can be concluded upon receipt of our concurrence. Determinations of “likely to adversely affect” require further consultation between the action agency and USFWS and NMFS. These consultations typically lead to the preparation of a biological opinion, although they can also lead to incorporation of additional protective measures that render the project “not likely to adversely affect” listed species or designated critical habitat. Any actions that are likely to result in the incidental take of a listed species are automatically considered “likely to adversely affect.”

In the case of proposed species or proposed critical habitat, the possible conclusions are:

Species

Likely to Jeopardize the Continued Existence

Not Likely to Jeopardize the Continued Existence

Critical Habitat

Likely to Destroy or Adversely Modify

Not Likely to Destroy or Adversely Modify

The effects analysis includes assessment of:

Direct and indirect effects (stressors) of Federal action

Direct and indirect effects (stressors) of applicant’s action

Direct and indirect effects (stressors) of interrelated or interdependent actions

Direct and indirect effects (stressors) of conservation and minimization measures

Remember: Direct and indirect effects under ESA are **not** the same as direct and indirect effects under NEPA. Be careful not to mix them up. Under ESA, direct effects are those that are caused by the action(s) and occur at the time of the action(s), and indirect effects are those that are caused by the action(s) and are later in time, but are still reasonably certain to occur.

Based on the various components of your action that you used to determine the extent of the action area, this analysis assesses the potential stressors resulting from each component and predicts the likely responses species and critical habitat will have. Note: don't forget to subsequently reconstruct the action to assess the combined stressors of the components. You may find that some stressors are synergistically minimized or avoided, whereas other stressors may increase.

Describe the stressors that are expected to result from each component. For example, instream actions may mobilize sediments that travel downstream as increased turbidity and then settle out as sediments on the stream substrate. Sound levels from machinery may be detectable hundreds of feet, thousands of feet, or even miles away. Describe these stressors in terms of their intensity, frequency, and duration.

Once you have determined the expected stressors resulting from an activity, the next step is to assess the overlap between those stressors and individuals of the species or components of critical habitat. The purpose of determining this overlap is to accurately and completely assess the potential exposure of species and habitat to the stressors resulting from the action. This exposure is the necessary precursor to any possible response those species and habitat may have. Your conclusions of "not likely to adversely affect" or "likely to adversely affect" are based in large part on this response.

To determine exposure, here is a basic set of questions you might answer:

- What are the specific stressors causing the exposure
- Where the exposure to the stressors would occur
- When the exposure to stressors would occur
- How long the exposure to stressors would occur
- What is the frequency of exposure to stressor
- What is the intensity of exposure to stressor
- How many individuals would be exposed
- Which populations those individuals represent
- What life stage would be exposed

For critical habitat, the questions would be similar but would focus on constituent elements of critical habitat.

Remember that exposure to a stressor is not always direct. For example, in some cases individuals of a species may be directly exposed to the sediment mobilized during construction. However, in other cases, individuals of the species would be exposed indirectly when sediment mobilized during construction settles out in downstream areas, rendering those areas unusable for later spawning or foraging.

Here are some examples of stressors you should address:

Exposure to abiotic factors affecting land, air, or water

Exposure to biotic factors affecting species behavior

Spatial or temporal changes in primary constituent elements of critical habitat

Loss or gain of habitat--direct and indirect

Fragmentation of habitat

Loss or gain of forage and/or foraging potential

Loss or gain of shelter/cover

Loss or gain of access through adjacent habitat/loss of corridors determine the potential response or range of responses the exposed individuals or components of critical habitat will have to those levels and types of exposure.

This is where the use of the best scientific and commercial information available becomes crucial. Your analysis must take this information into consideration and the resulting document must reflect the use of this information and your reasoning and inference based on that information. Bear in mind that this analysis may not be the final word on the expected responses as further consultation with USFWS or NMFS may refine this analysis.

Be sure to describe the expected responses clearly and focus your analysis towards determining if any of the possible responses will result in the death or injury of individuals, reduced reproductive success or capacity, or the temporary or permanent blockage or destruction of biologically significant habitats (*e.g.*, foraging, spawning, or lekking grounds; migratory corridors, etc.). Any of these above responses are likely to qualify as adverse effects. If the available information indicates that no observable response is expected from the levels and types of exposure, the action may be unlikely to adversely affect a species or critical habitat. However, remember that no observable response may actually mask an invisible internal response such as increased stress hormone levels, elevated heart rate, etc. Depending on the fitness of the exposed individual and the surrounding environment (including other threats), these “invisible” responses may lead to more serious consequences. We recommend working with your NMFS or USFWS contact to determine the appropriate conclusion.

Don't forget to consider:

Individual responses based on the species biology and sensitivity to exposure

The combined effects of existing threats and new exposure

The combined effects of limiting factors and new exposure

Disrupted reproduction and/or loss of reproduction

Exposure and response of species and critical habitat to interrelated and interdependent actions

Understanding and avoiding the common flaws in developing an effect determination will save you considerable time. These common flaws are: the “Displacement” Approach (*i.e.*, the species will move out of the way; there are plenty of places for them to go); the “Not Known to Occur Here” Approach (*i.e.*, looking at survey results, or lack of results, instead of the Recovery Plan for the species); the “We’ll Tell You Later” Approach (*i.e.*, if we find any, then we’ll let you know and that is when we will consult); or the “Leap of Faith” Approach (*i.e.*, the agency wants the USFWS or NMFS to accept a determination based on trust, rather than the best scientific and commercially available information.). Sticking to flawed determinations will cost everyone time, money, and aggravation.

Analysis of alternate actions

This analysis is required for actions that involve preparation of an EIS. For all other actions, a summary of alternatives discussed in other environmental documents is useful.

OTHER RELEVANT INFORMATION

Provide any other relevant available information the action, the affected listed species, or critical habitat. This could include local research, studies on the species that have preliminary results, and scientific and commercial information on aspects of the project.

CONCLUSION

This is where you put your overall effect determination after you have analyzed the exposure and response of species and habitat to the stressors resulting from the proposed action and interrelated or interdependent actions. Effect determinations must be based on a sound reasoning from exposure to response and must be consistent with types of actions in the project description, the biology in the species accounts, the habitat status and condition, changes to the existing environment, and the best scientific and commercial information available.

Again, the two potential conclusions for **listed species** are:

Not likely to adversely affect species

Likely to adversely affect species

The two potential conclusions for **designated critical habitat** are:

Not likely to adversely affect critical habitat

Likely to adversely affect critical habitat

The two potential conclusions for **proposed species** are:

Not likely to jeopardize species

Likely to adversely jeopardize species

The potential conclusions for **proposed critical habitat** are, under informal and formal consultation respectively:

Not likely to adversely affect species

Likely to adversely affect species

Not likely to destroy or adversely modify critical habitat

Likely to destroy or adversely modify critical habitat

Include the basis for the conclusion, such as discussion of any specific measures or features of the project that support the conclusion and discussion of species expected response, status, biology, or baseline conditions that also support conclusion.

If you make a "no effect" determination, it doesn't need to be in the assessment, but you might have to defend it. Keep the documentation for your administrative record.

LIST OF DOCUMENTS

Provide a list of the documents that have bearing on the project or the consultation, this includes relevant reports, including any environmental impact statements, environmental assessment, or biological assessment prepared for the project. Include all planning documents as well as the documents prepared in conformance with state environmental laws

IMPORTANT NOTE: Each of these documents must be provided with the initiation package consultation for the Services to be able to proceed with formal consultation.

LITERATURE CITED

We are all charged with using the best scientific and commercial information available. To demonstrate you did this, it is a good idea to keep copies of search requests in your record. If you used a personal communication as a reference, include the contact information (name, address, phone number, affiliation) in your record.

LIST OF CONTACTS/CONTRIBUTORS/PREPARERS

Please include contact information for contributors and preparers as well as local experts contacted for species or habitat information.

GLOSSARY

Action Area - all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action.

Beneficial Effects – contemporaneous positive effects without any adverse effects.

Cumulative Effects – are those effects of future State or private activities, not involving Federal activities, that are reasonably certain to occur in the action area of the Federal action subject to consultation.

Discountable Effects – those that are extremely unlikely to occur. Based on best judgment, a person would not: (1) be able to meaningfully measure, detect, or evaluate insignificant effects; or (2) expect discountable effects to occur.

Effects of the Action – refers to the direct and *indirect effects* of an action on the species or critical habitat, together with the effects of other activities that are *interrelated* or *interdependent* with that action, that will be added to the environmental baseline.

Environmental Baseline – includes the past and present impacts of all Federal, State, or private actions and other human activities in the action area, the anticipated impacts of all proposed Federal projects in the action area that have already undergone formal or early section 7 consultation, and the impact of State or private actions that are contemporaneous with the consultation in process.

Indirect Effects - Indirect effects are those that are caused by the action(s) and are later in time, but are still reasonably certain to occur.

Insignificant Effects – relate to the size of the impact and should never reach the scale where take would occur.

Interdependent Actions - Interdependent actions are those that have no significant independent utility apart from the action that is under consideration, *i.e.* other actions would not occur “but for” this action.

Interrelated Actions - Interrelated actions are those that are part of a larger action and depend on the larger action for their justification, *i.e.* this action would not occur “but for” a larger action.

Likely to Jeopardize the Continued Existence of – to engage in an action that reasonably would be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species.

May Affect, Likely to Adversely Affect – the appropriate finding if any adverse effect may occur to listed species or critical habitat as a direct or indirect result of the proposed action or its interrelated or interdependent actions, and the effect is not discountable, insignificant, or beneficial. Requires that a biological opinion be prepared by the Service.

May Affect, Not Likely to Adversely Affect – the appropriate conclusion when effects on a listed species are expected to be *discountable*, *insignificant*, or completely *beneficial*. Requires written concurrence from the Service.

No Effect – the appropriate conclusion when a listed species will not be affected, either because the species will not be present or because the project does not have any elements with the potential to affect the species. A “no effect” determination does **not** require written concurrence from the Service and ends

ESA consultation requirements. Action agency should document their reasoning for this conclusion in their file.