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FAQ: How should communities determine the appropriate scales to assess project impacts?

The Reasonable and Prudent Alternative (RPA) does not give guidance on how to determine the appropriate geographic and temporal scales to analyze potential project effects. For instance, some projects may result in identifiable degradation to habitat at a project-site scale, but their effects may not be measurable or observable in a larger spatial context, such as a 5th-field Hydrologic Unit Code (HUC) watershed (similar in scale to a Water Resource Inventory Area (WRIA)). Conversely, the potential cumulative effects of multiple projects within a watershed will not be accounted for if only the effects at the individual project scale are considered. In addition, some projects may have short-term negative effects, but are likely to result in long-term improvements in habitat.

The Endangered Species Consultation Handbook (USFWS/NMFS 1998, http://www.fws.gov/endangered/esa-library/pdf/esa_section7_handbook.pdf) describes the assumptions and steps involved in analyzing the appropriate spatial and temporal scales of project actions - it should be referenced for formal guidance. The discussion that follows in this memo solely represents an informal summarization of some of the direction from that handbook, as well as selected guidance from some of the pertinent federal regulations and other NMFS documents, to assist jurisdictions in understanding the project effects analysis process.

The impacts of actions need to be described at the project spatial scale (i.e. reach or sub-watershed) within a habitat assessment or biological assessment. In turn, the impacts those actions have upon habitat functions and life history variables for nearby potentially affected ESA-listed population(s) must also be assessed; this is usually at a much larger scale. The short- and long-term effects of project actions must also be evaluated, and the time scales assumed for each defined and justified. If a project has adverse effects over the short-term, but is neutral or beneficial over the long-term, the overall call for the project is an adverse effect. Many short-term negative effects constitute adverse effects.

The NFIP BO does not cover projects with adverse effects within the Protected Area, hence they are not allowed, and could not occur unless they were covered under a separate ESA consultation. Projects within the 100-year floodplain, but beyond (outside of) the Protected Area are allowed to have limited adverse effects under the NFIP BO if the proponent can demonstrate to the local jurisdiction that they have adequately mitigated those effects. FEMA may provide technical assistance to the community in reviewing the documentation. Possible cumulative effects must be analyzed and documented in all cases.

The following narrative solely represents an informal summarization of part of that handbook, and portions of some pertinent federal regulations and other NMFS guidance documents to help



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jurisdictions understand the process. Refer to the Endangered Species Consultation Handbook (USFWS, NMFS 1998) for detailed formal direction.

All biological assessments and habitat assessments must define and explain the basis for the spatial and temporal scales that were selected to analyze effects to species listed under the ESA. The selection of the scales to apply will vary by the scope and distribution of the project(s) under consideration. The initial scale of assessment is the 'action area', which includes all areas to be affected directly or indirectly by the federal action and not merely the immediate area involved in the action (50 CFR 402.02). All actions that require a federal permit, or are partially funded by the federal government are Federal actions. The action area will often consist of the stream reach(s) that have any viable potential to be affected by project actions. For larger or widely distributed project actions, the action area may include one or more sub-watersheds, or even entire watersheds. The biological requirements of each potentially affected species in the action area will vary depending on the life history stage(s) present and the natural range of variation present within the affected river system(s).

The '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 ESA Section 7 consultation, and the impact of state or private action which are contemporaneous with the consultation in process (50 CFR 402.02). NMFS prescribes that the environmental baseline be documented in terms of those habitat features and processes that are necessary to support all life stages of all fish species in those populations that may be affected by impacts in the action area. As an example of species fish species status, there are currently 22 existing populations of Chinook identified by NMFS within the Puget Sound Chinook ESU, as well as 15 populations that have been deemed extinct by NMFS.

When the environmental baseline departs from those physical and biological requirements that are needed to support all life stages of the affected species, any adverse effects of a proposed action on the ESU or its habitat are more likely to jeopardize the listed species or result in destruction or adverse modification of critical habitat (NMFS 1999, The Habitat Approach - Implementation of Section 7 of the ESA for Actions Affecting the Habitat of Pacific Anadromous Salmonids). NMFS determines whether proposed actions would further degrade the environmental baseline or hinder attainment of 'properly functioning conditions' at a spatial scale relevant to the ESU in question. NMFS guidance states "That because salmon ESUs typically consist of groups of populations that inhabit geographic areas ranging in size from less than ten to several thousand square miles (depending on the species), the analysis must [be] applied at a spatial scale resolution wherein the actual effects of the action upon the species can be determined" (NMFS 1999). As noted earlier, this scale is initially the action area, and then in turn any impacts upon habitat and life history variables for potentially affected ESA-listed populations, and how those impacts to populations affect the entire ESU for each affected species.



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The temporal duration(s) of impacts also have to be identified for each project proposal. These durations may vary by individual project actions, project location, and variables considered (e.g. localized increases in turbidity versus loss of canopy cover due to vegetation removal). Some actions will have differing long-term versus short-term impacts. The time frames for each estimated effect needs to be explained.

Potential cumulative effects need to be analyzed for all projects, including defining the spatial and temporal scales that are being considered, and a brief explanation of why they were selected. The potential spatial extent and possible duration may vary between potentially affected habitat variables (e.g. possible localized impacts of increases in stream water temperatures due to loss of shading, versus downstream routing of sediment). If there are no measurable or observable effects due to direct, indirect, interrelated, or interdependent impacts from a proposed action, there is no potential for cumulative effects from other projects.

An adverse effect to a listed species may occur as a direct or indirect result of the proposed action, or its interrelated or interdependent actions. If the effect is not discountable, insignificant, or beneficial, it is defined as an adverse effect (USFWS and NMFS 1998, Endangered Species Consultation Handbook). Discountable effects are extremely unlikely to occur. Insignificant effects relate to the scope and size of the impacts and exposure of listed species, and never reach the scale where take occurs (USFWS and NMFS 1998, Endangered Species Consultation Handbook). A person would not be able to meaningfully measure, detect, or evaluate insignificant effects (NMFS 1996 – Making ESA Determinations of Effects for Individual or Grouped Actions at the Watershed Scale). If a project proposed within the Protected Area would result in an adverse effect, it must either be redesigned to avoid the adverse effect, or consulted on under separate ESA consultation (section 7, 4(d), or 10), otherwise the project cannot occur.

The term ‘take’ is related to adverse effects. The ESA defines ‘take’ as meaning “to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect a listed species or attempt to engage in any such conduct” (16 USC 1532(1)). In turn, “The term ‘harm’ refers to an act that actually kills or injures a protected species” (65 FR 52422-01, 42426). NMFS has further explained that “harm can arise from significant habitat modification or degradation where it actually kills or injures protected species by significantly impairing essential behavioral patterns, including breeding, spawning, rearing, migrating, feeding, or sheltering” (50 CFR 17.3).