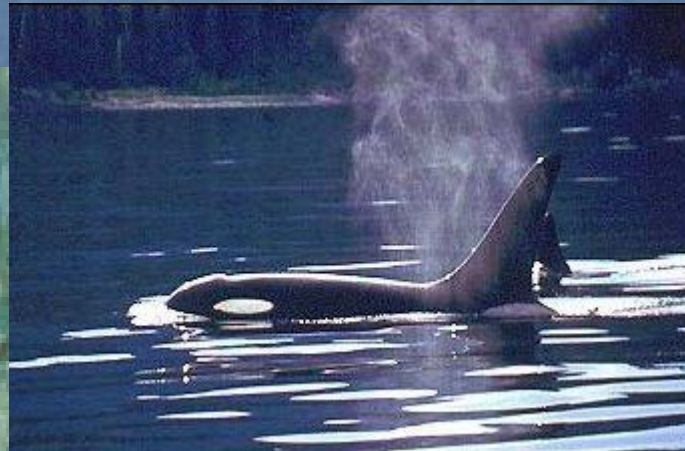
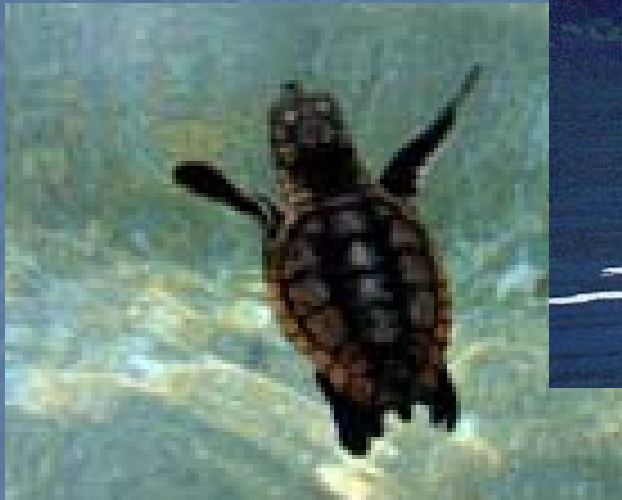


Indirect Effects of Pesticides to Listed Species: Key Statutory and Regulatory Considerations



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Objective

Provide a general overview of:

- key statutory and regulatory considerations when developing analysis plan for consultation
- NMFS Office of Protected Resources approach for evaluating indirect effects for Section 7 consultations

Section 7 Requires:

All federal agencies to consult with the Services (USFWS, NMFS) to insure any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of designated critical habitat

Destruction or adverse modification of critical habitat

a direct or indirect alteration that appreciably diminishes the value of critical habitat for both the survival and recovery of a listed species. [50 CFR §402.02]

Listed Species

- More than 1900 listed under ESA
- USFWS manages terrestrial and freshwater species
- NMFS manages marine and anadromous species.
- NMFS currently has jurisdiction over 67 listed species

Species Under NMFS Jurisdiction

- Marine Mammals (21)
- Marine Turtles (8)
- Marine and Anadromous Fish (34)
- Marine Invertebrates (3)
- Marine Plants (1)

How do the Services address indirect effects of pesticides?

1998 Endangered Species Consultation Handbook

- *Procedures for Conducting Consultations and Conference Activities Under Section 7 of the Endangered Species Act*
- **U.S. Fish & Wildlife Service & National Marine Fisheries Service**

Action

All activities or programs of any kind authorized, funded, or carried out, in whole or in part, by Federal agencies in the United States or upon the high seas.
[50 CFR §402.02]

Federal Action

“Authorization for use or uses described in labeling of a pesticide product containing a particular pesticide active ingredient.”

Understandings reached NMFS-USFWS-USEPA meeting 12/12/2007

TOUCHDOWN[®]
PRE

Herbicide
Nonselective Foliar Systemic
Herbicide for Weed Control

Active ingredient:
*Glyphosate:
N-(phosphonomethyl) glycine 28.3%
Inert Ingredients: 71.7%

Total: 100.0%
*Contains 3 pounds of glyphosate acid in each gallon, in the diammonium salt form. See directions for use in attached booklet.

AGRICULTURAL USE REQUIREMENTS

Use this product only in accordance with its labeling and with the Worker Protection Standard, 40 CFR part 170. Refer to supplemental labeling under "Agricultural Use Requirements" in the Directions for Use section for information about this standard.

EPA Reg. No. 100-1121
EPA Est. 100-LA-001356
EPA Est. 100-NE-001 MSA
Superscript identifies manufacturing site

Touchdown[®] and the Syngenta logo are trademarks of a Syngenta Group Company
U.S. Patent No. 5,468,718
©2001 Syngenta
Syngenta Crop Protection, Inc.
Greensboro, North Carolina 27409
www.syngenta-us.com
SCP 1121A-L1 0601

2.5 gallons
U.S. Standard Measure

syngenta

**KEEP OUT OF REACH OF CHILDREN.
CAUTION**

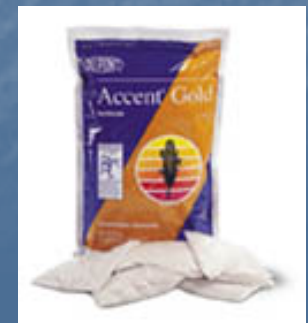
| FIRST AID | |
|---|---|
| If in eyes | • Flush eyes with plenty of water. Call a physician if irritation persists. |
| Have the product container or label with you when calling a poison control center or doctor, or going for treatment. | |
| HOT LINE NUMBER For 24 Hour Medical Emergency Assistance (Human or Animal) or Chemical Emergency Assistance (Spill, Leak, Fire, or Accident), Call 1-800-888-8372 | |

Precautionary Statements
Hazards to Humans and Domestic Animals
Causes moderate eye irritation. Avoid contact with eyes or clothing. Wash thoroughly with soap and water after handling.

Environmental Hazards
Do not apply directly to water, or to areas where surface water is present, or to intertidal areas below the mean high water mark. Do not contaminate water when cleaning equipment or disposing of equipment wash water.

Storage and Disposal
Container Disposal
Triple rinse (or equivalent). Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill or by incineration, or, if allowed by State and local authorities, by burning. If burned, stay out of smoke.

CONTAINER IS NOT SAFE FOR FOOD, FEED, OR DRINKING WATER!



Deconstruction of the Action

- Stressors associated with action based on review of EPA authorized labels
 - Active ingredient
 - Metabolites and degradates
 - Other ingredients
 - Recommended tank mixtures (e.g. with other pesticides or adjuvants)
 - Application restrictions/ methods

Analysis Plan Considerations

Informal consultations

Purpose: Insure no jeopardy
/adverse modification

Product: NLAA concurrence / non-
concurrence

Scale: individual organisms, critical
habitat

Screening evaluation: If NLAA then
no jeopardy

Formal consultations

Purpose: Insure no jeopardy
/adverse modification

Product: Biological Opinion

Scale: individual organisms, critical
habitat, population, species

Comprehensive evaluation:
includes quantification of
amount and extent of take

Endangered Species Act definitions

ESA Consultation Handbook

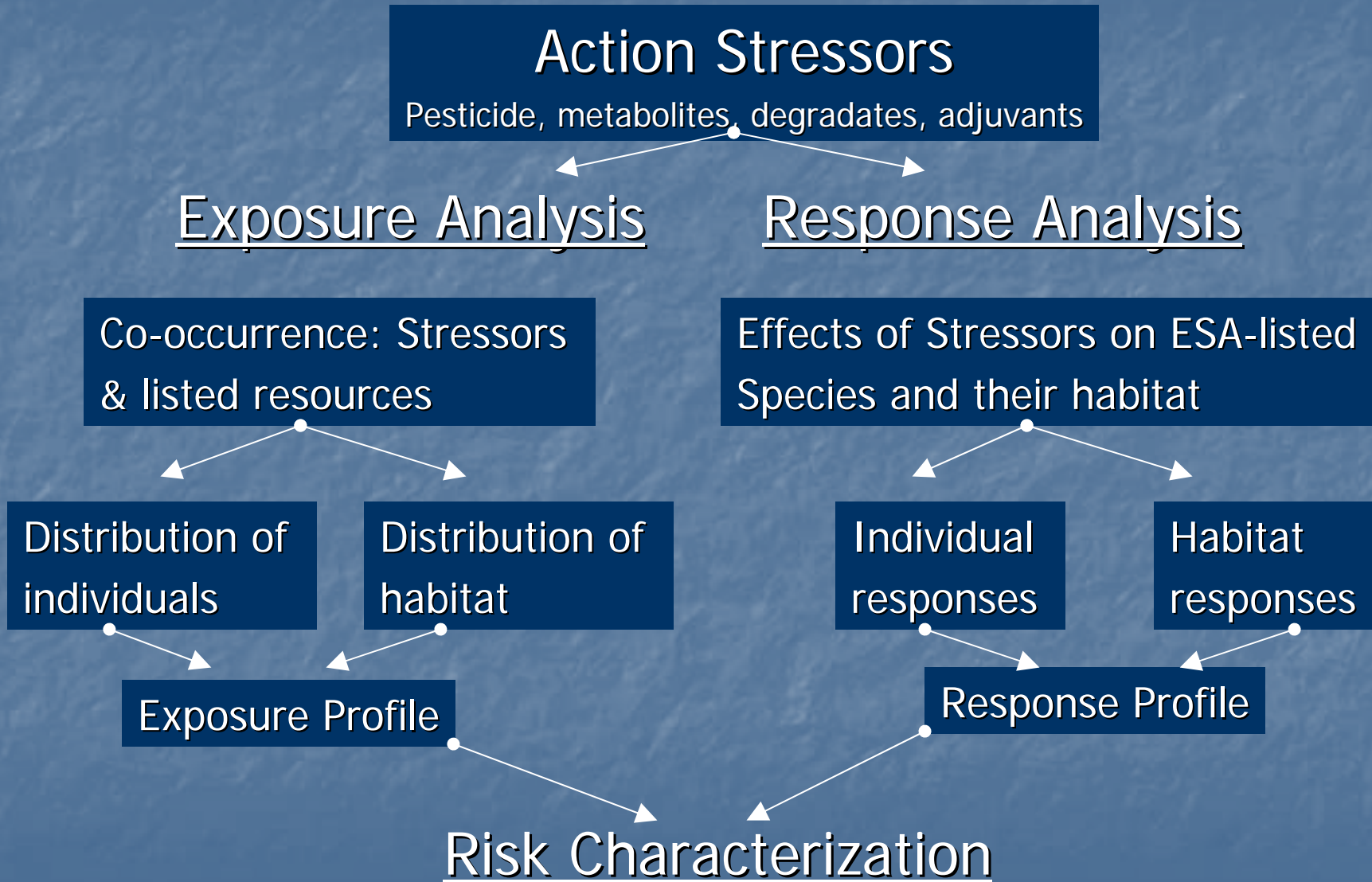
- Not likely to adversely affect (NLAA) – effects on listed species are expected to be *discountable*, or *insignificant*, or *completely beneficial*.
- Discountable – Extremely unlikely to occur... can't measure or detect
- Insignificant – should never reach the scale where *take* occurs.

Endangered Species Act definitions

ESA Consultation Handbook

- Take- “to *harass, harm, pursue...*”
- Harm – “any significant habitat modification or degradation that results in death or injury... significantly **impairing behavioral patterns such as breeding, feeding, or sheltering**”
- Harass – “...to significantly disrupt normal behavior patterns which include but are not limited to, **breeding, feeding or sheltering**”

Conceptual Framework- Risk of to Listed Species



Risk Characterization

Effects on individuals

Effects of habitat

Effects on populations

Effects on primary
constituent elements

Effects on species
(ESU or DPS)

Effects on conservation value of
designated critical habitat

Can the action agency insure
that pesticide actions are
not likely to jeopardize the
continued existence of
the species?

Can the action agency insure
that pesticide actions
are not likely to adversely modify
or destroy designated critical
habitat?

Critical Habitat

- Specific proposed or designated areas that contain Primary Constituent Elements (50 CFR §17 and 226)

Primary Constituent Elements (PCEs)

- Physical and biological features of critical habitat essential to the conservation of the species
- Useful starting point for identifying assessment endpoints for indirect effects

Southern Resident Killer Whales

Primary Constituent Elements

- Water quality – to support growth and development of the orca population
- Prey species – protecting the quality, quantity, and availability of the orca's food supply
- Passage conditions –ensuring room for migration, resting, and foraging.

Are the orcas starving?

Seattle Post Intelligencer- 10/24/2008



Orcas from L pod, usually seen in [Washington] state waters, surface near Cypress Point, Calif. Scientists suggest the pod may be driven to swim hundreds of miles just to meet minimum nutritional requirements. (Photo: Nancy Black / Monterey Bay Whale Watch)

Are the orcas starving?

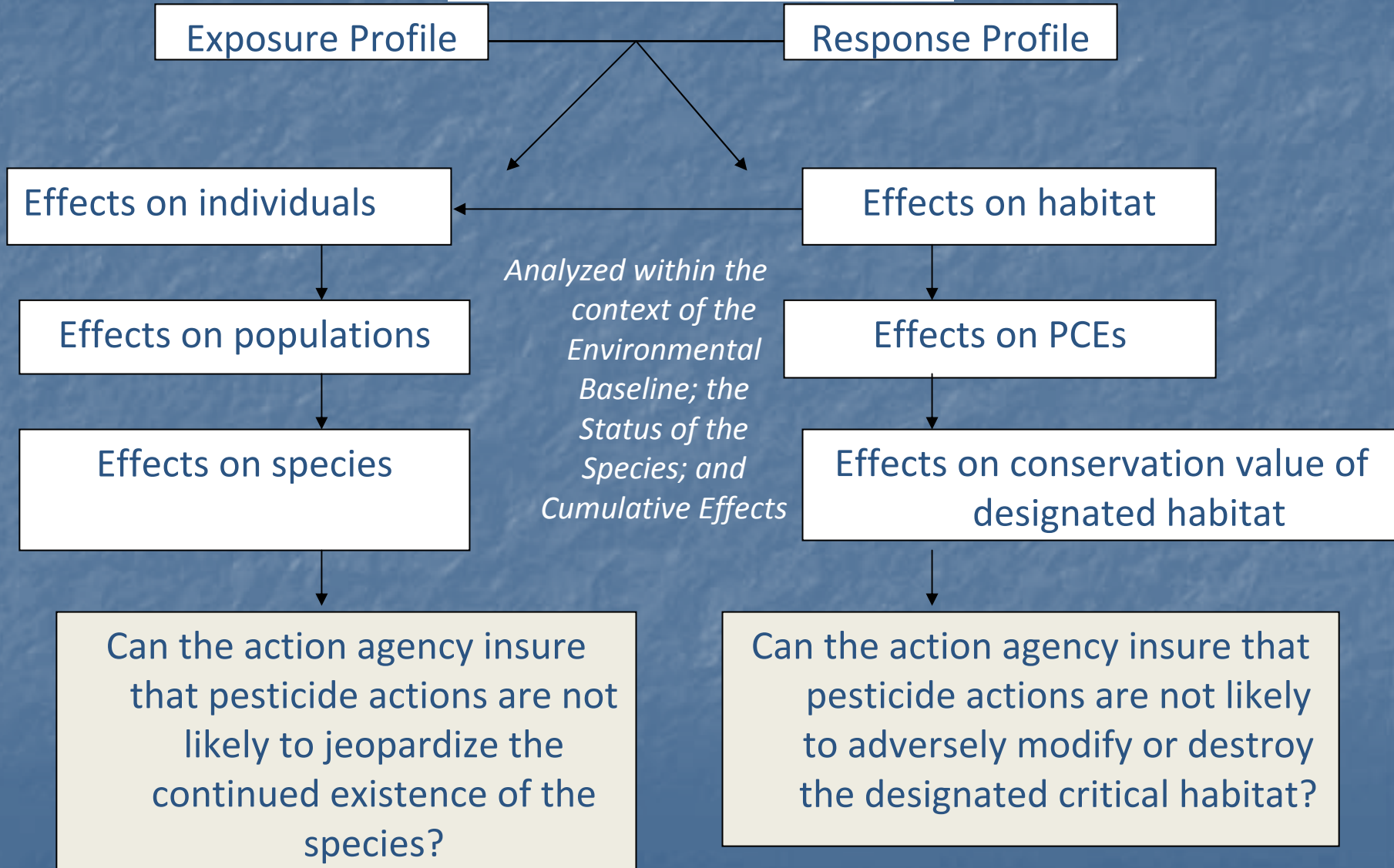
Seattle Post Intelligencer- 10/24/2008

- Orcas strong preference for Chinook salmon
- Many of the Chinook runs faltering
- Evidence Orcas starving
- Relationships between declines in orca populations and Chinook populations

Action Area

- The action area 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].

Conceptual Framework for Assessing Risk to Listed Species



Environmental Baseline

By regulation, environmental baselines for biological opinions include the past and present **impacts of all state, Federal 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 which are contemporaneous with the consultation in process (50 CFR §402.02).

Pesticide Mixtures

- Two or more pesticides are detected in agricultural, urban, and mixed use watersheds more than 90% of the time^{*}
- Monitoring in urban streams across U.S.^{**}
 - Two or more herbicides in 85% samples
 - Two or more insecticides in 54% samples
 - Four or more herbicides were detected in 61% of the water samples.

Source:

^{*}Gilliom et al. 2006. Pesticides in the nations streams and groundwater, 1991-2001. NAWQA Program Circular 1291. Unites States Geological Servic

^{**}Hoffman et al. 2000. Environmental Toxicology and Chemistry 19:2249-2258.

Concluding Remarks

- Assessment of indirect effects is required for section 7 consultation
- Regulatory and statutory considerations are necessary when developing assessment plan for ESA consultation
- Risk hypotheses should be based on how the species interacts with its environment
- PCEs are a logical starting point for identification of assessment endpoints for indirect effects analysis

Questions?



Indirect Effects

Those effects that are caused by or will result from the proposed action and are later in time, but are still reasonably certain to occur. [50 CFR §402.02]

What information does NMFS consider in developing and evaluating Risk Hypotheses?

- The data standard for consultation is “Best Scientific and Commercial Data Available”
- Primary and original sources of information
 - Peer-reviewed: Studies published in scientific journals
 - Other:
 - Registrant submitted studies
 - Government reports
 - Dissertations

Use of Best Scientific and Commercial Data

