

# Building Retrospective Review into Endangered Species Protection

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The views and analyses presented here are those of the authors  
and not necessarily those of USDA.

# Endangered Species Regulatory Actions?

1. Propose to list a species.
2. Finalize a listing.
3. Propose a critical habitat designation with proposed Regulatory Impact Analysis.
4. Finalize a critical habitat designation, in consideration of economic impacts with final RIA.
5. Consultation with agencies.
6. Services issue Biological Opinions (BiOps) that define “reasonable and prudent” measures and alternatives to prevent adverse modification of the critical habitat.
7. Review their listing status every 5 years.

# When might EO 13563 retrospective analysis be useful for ESA actions?

Goal: simplify and harmonize rules across agencies in order to reduce costs through retrospective review.

- When there has been a significant change in science or economic impacts due to unanticipated circumstances.
- When there are cumulative impacts from other agency(ies)' actions.
- When there is significant public participation in the issues governed by the original rulemaking.
- When there is already an ongoing review process.

# NMFS lists and Designates Critical habitat For 13 ESUs of Pacific salmon and steelhead in WA, OR and ID



74572

Federal Register/Vol. 69, No. 239/Tuesday, December 14, 2004/Proposed Rule

## DEPARTMENT OF COMMERCE

### National Oceanic and Atmospheric Administration

#### 50 CFR Part 226

[Docket No. 030716175-4327-03; I.D. No. 070303A]

RIN No. 0648-AQ77

#### Endangered and Threatened Species; Designation of Critical Habitat for 13 Evolutionarily Significant Units of Pacific Salmon (*Oncorhynchus* spp.) and Steelhead (*O. mykiss*) in Washington, Oregon, and Idaho

**AGENCY:** National Marine Fisheries Service (NMFS), National Oceanic and Atmospheric Administration, Commerce.

**ACTION:** Proposed rule; request for comments.

**SUMMARY:** We, the National Marine Fisheries Service (NMFS), propose to designate critical habitat for 13 Evolutionarily Significant Units (ESUs) of Pacific salmon (chum, *Oncorhynchus keta*; coho, *O. kisutch*, sockeye, *O. nerka*; chinook, *O. tshawytscha*) and *O. mykiss* (inclusive of anadromous

**DATES:** Comments on this proposed rule must be received by 5 p.m. P.S.T. on February 14, 2005. Requests for public hearings must be made in writing by January 28, 2005. We have already scheduled public hearings on this proposed rule as follows:

Tuesday, January 11, 2005, from 6:30–9:30 p.m. at the Doubletree Hotel Columbia River, 1401 North Hayden Island Drive in Portland, OR;

Thursday, January 13, 2005, from 6:30–9:30 p.m. at the Red Lion Hotel Columbia Center, 1101 North Columbia Center Blvd. in Kennewick, WA;

Tuesday, January 18, 2005, from 6:30–9:30 p.m. at the Radisson Hotel Seattle Airport, 17001 Pacific Highway South in Seattle, WA; and

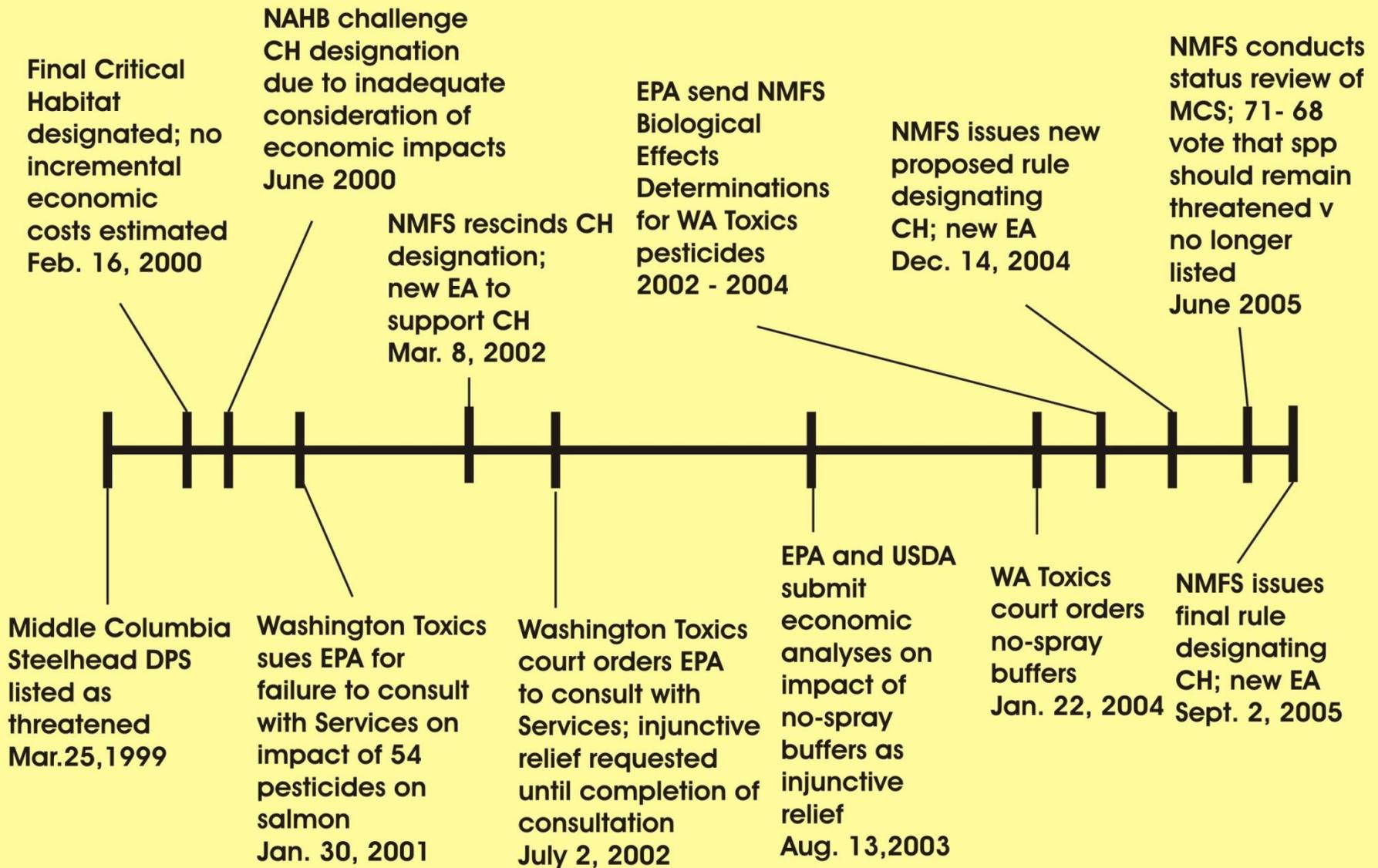
Tuesday, January 25, 2005, from 6:30–9:30 p.m. at the Red Lion Hotel Boise Downtown, 1800 Fairview Avenue in Boise, ID.

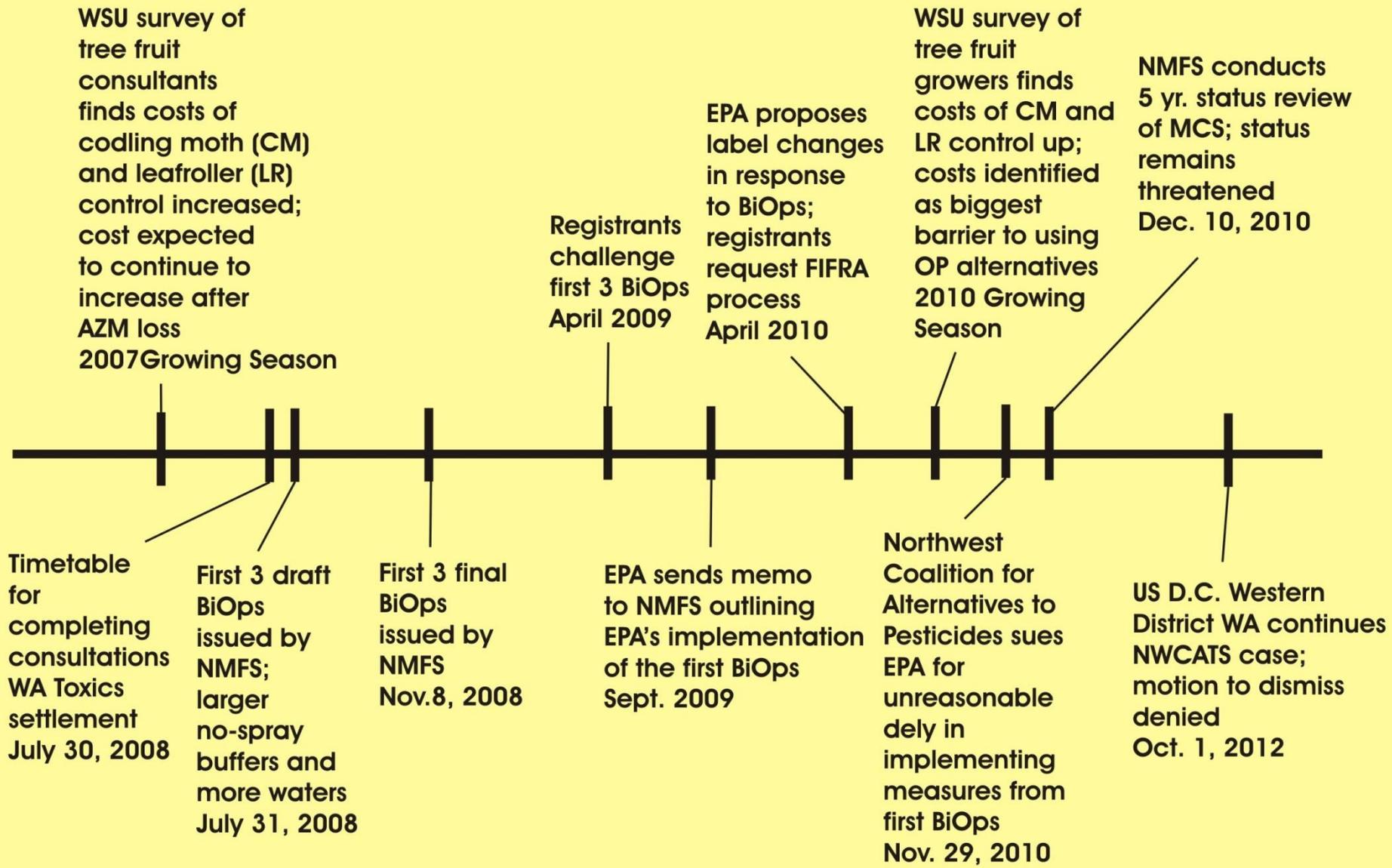
Details regarding the hearing format and related information will be posted by December 24, 2004, on our Web site at <http://www.nwr.noaa.gov/1salmon/salmesa/crithab/CHsite.htm>.

**ADDRESSES:** You may submit comments, identified by docket number

## Background

We are reviewing whether steelhead population and *O. mykiss* steelhead resident re-endangered habitat for U.S.C. 1532 ESA listing constitute ESA defined subspecies and any distinct any species which interbreed 1991 NMFS population or *O. mykiss* population evolutionarily which it does reproductively important evolutionary species. (50 CFR 171.16 (1991.) (In addition, contain a list of Under this rule, salmon an





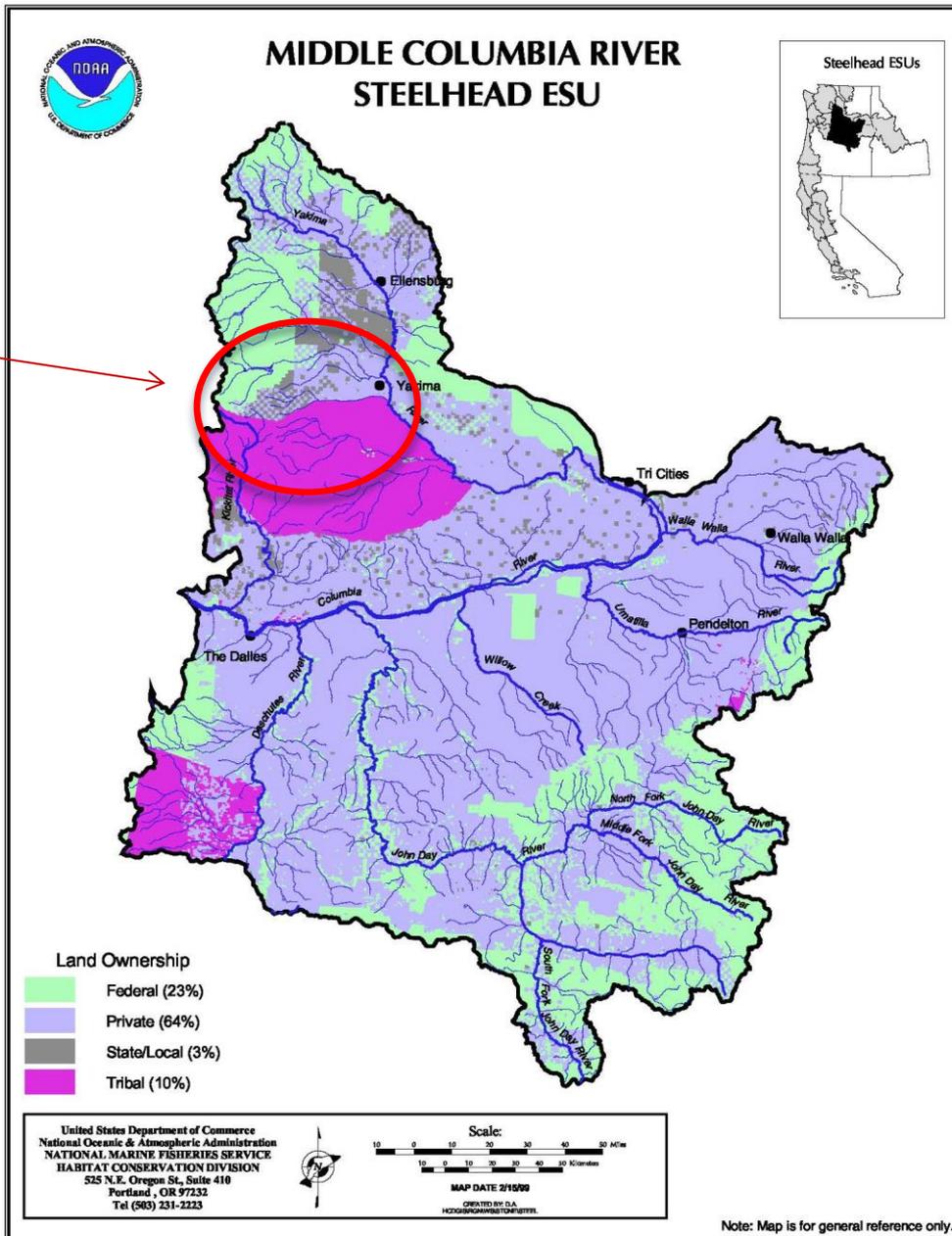
# 2005 Final Economic Analysis for Designation of Critical Habitat\*

## • Estimated Economic Impacts for 13 Activity Types:

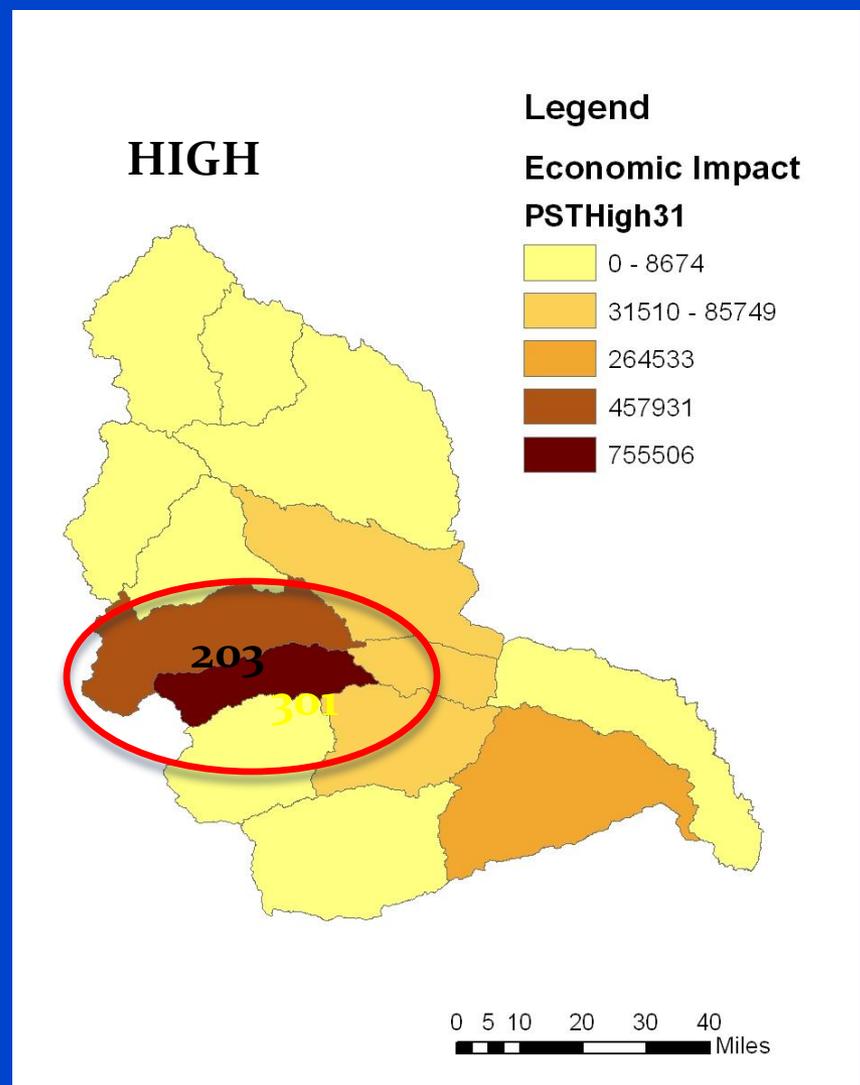
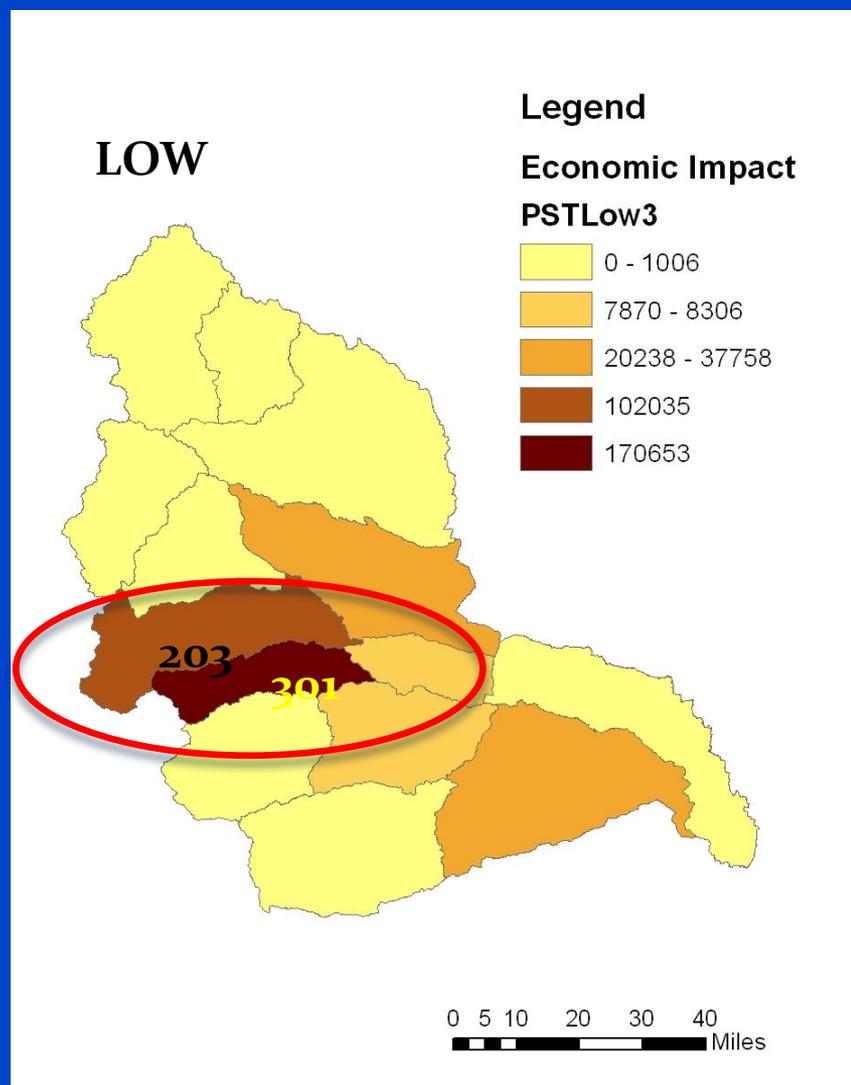
- Hydropower Dams
- Non-hydropower Dams
- Federal land management
- Federal land management (wilderness)
- Grazing
- Transportation Projects
- Utility Projects
- Sand & Gravel Operations
- Instream Activities
- Dredging
- Residential & Commercial Development
- NPDES Activities
- Pesticides

# Study Area

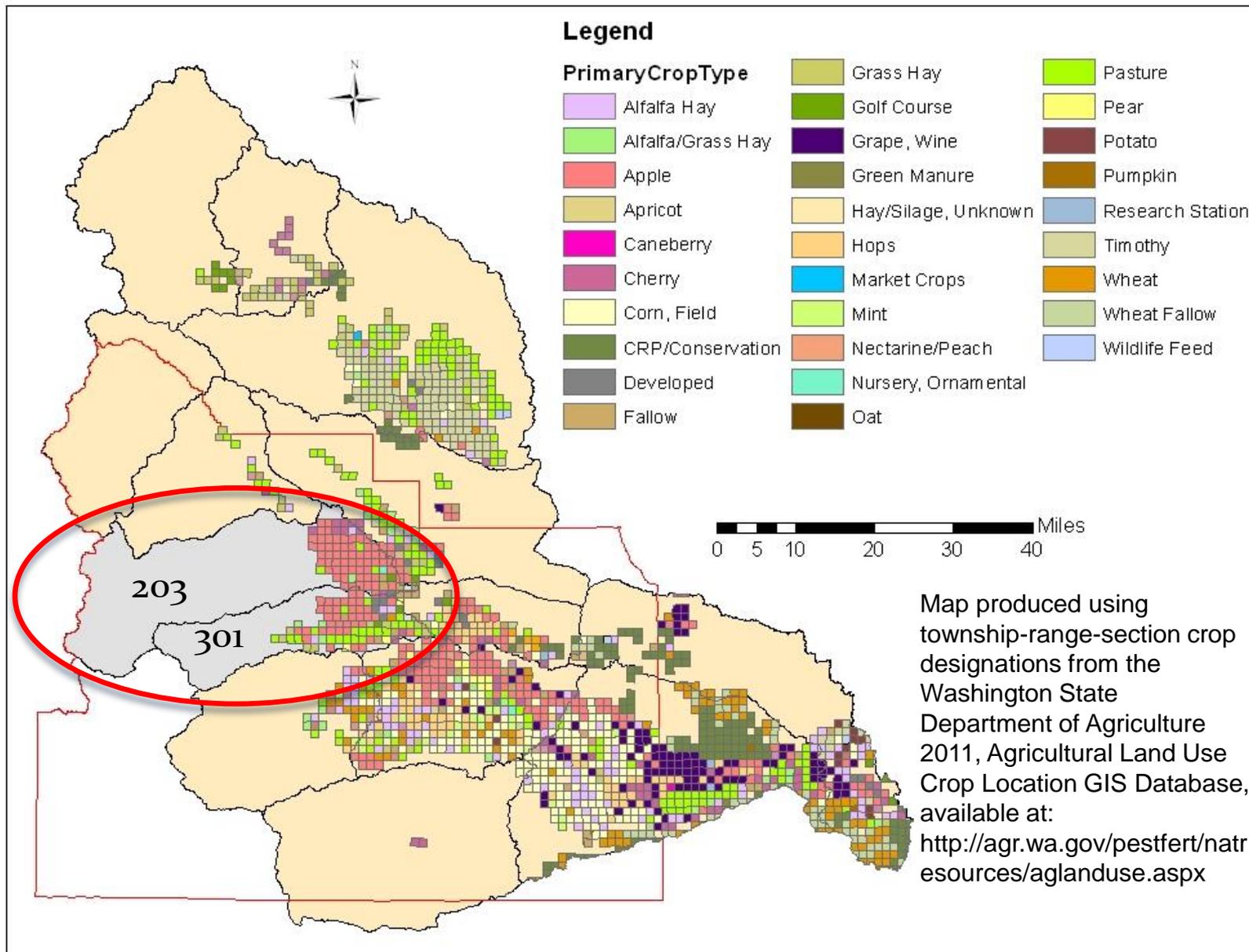
National Oceanographic and Atmospheric Administration, National Marine Fisheries Service, Habitat Conservation Division. 1999. Available at: [http://www.nwr.noaa.gov/publications/gis\\_maps/maps/salmon\\_steelhead/esa/steelhead/steelheadmcrmap.pdf](http://www.nwr.noaa.gov/publications/gis_maps/maps/salmon_steelhead/esa/steelhead/steelheadmcrmap.pdf)

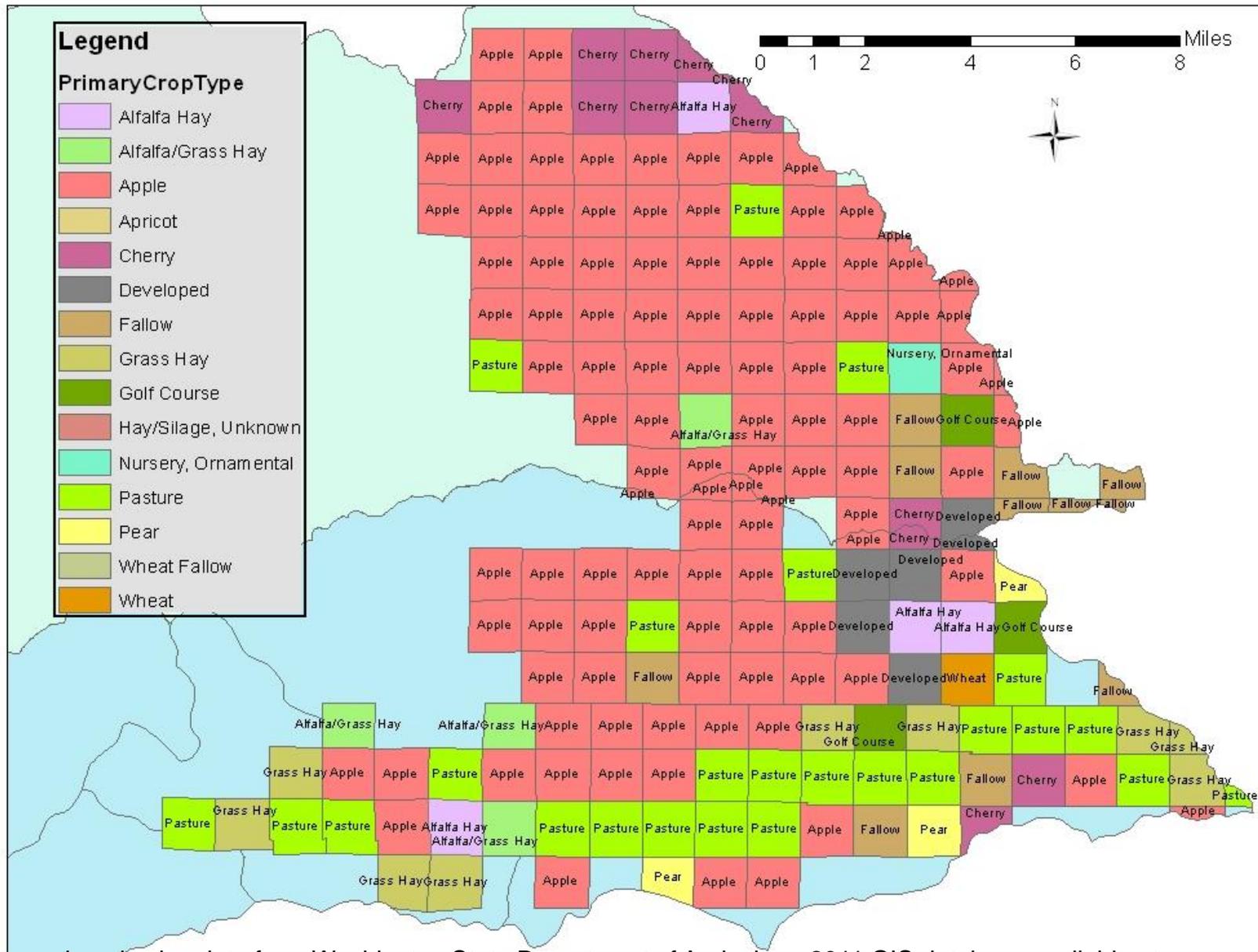


# Economic impact\* due to pesticide restrictions



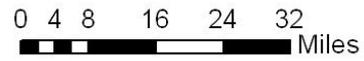
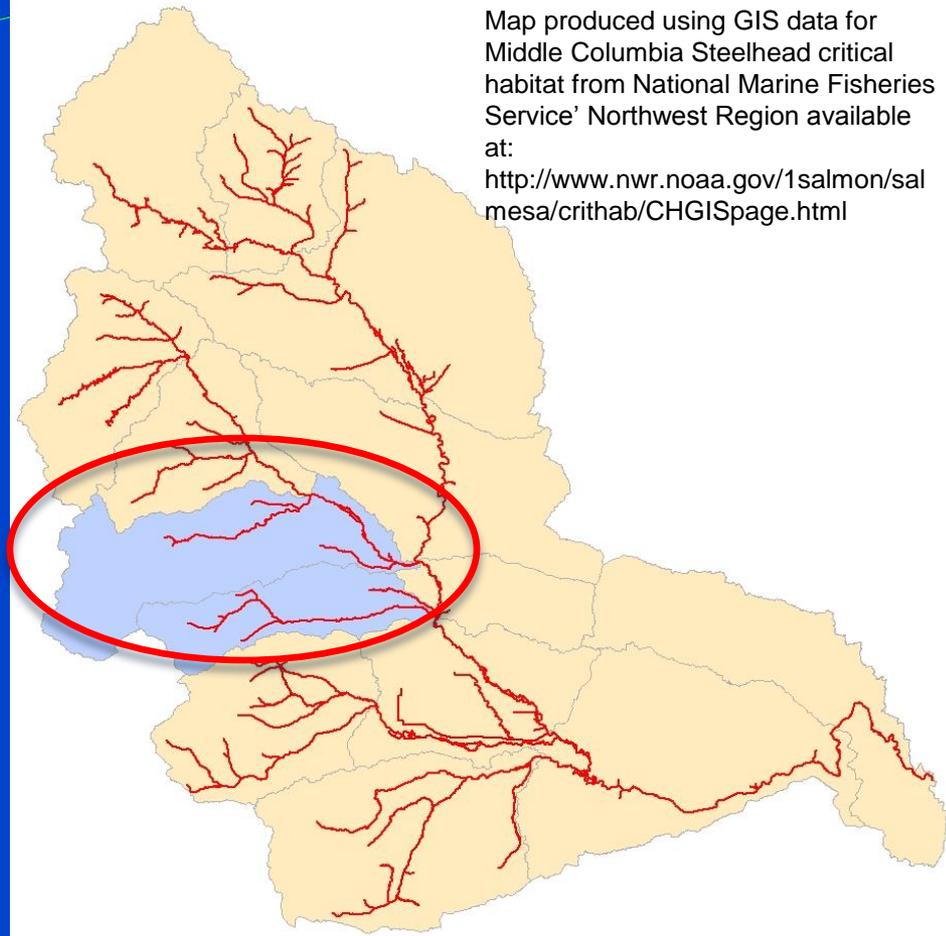
From the low and high economic impact scenarios calculated for 5 digit HUCs in Yakima in the Final Economic Analysis of Critical Habitat Designation for 12 West Coast Salmon and Steelhead ESUs, August 2005. See slide 7 for complete citation.

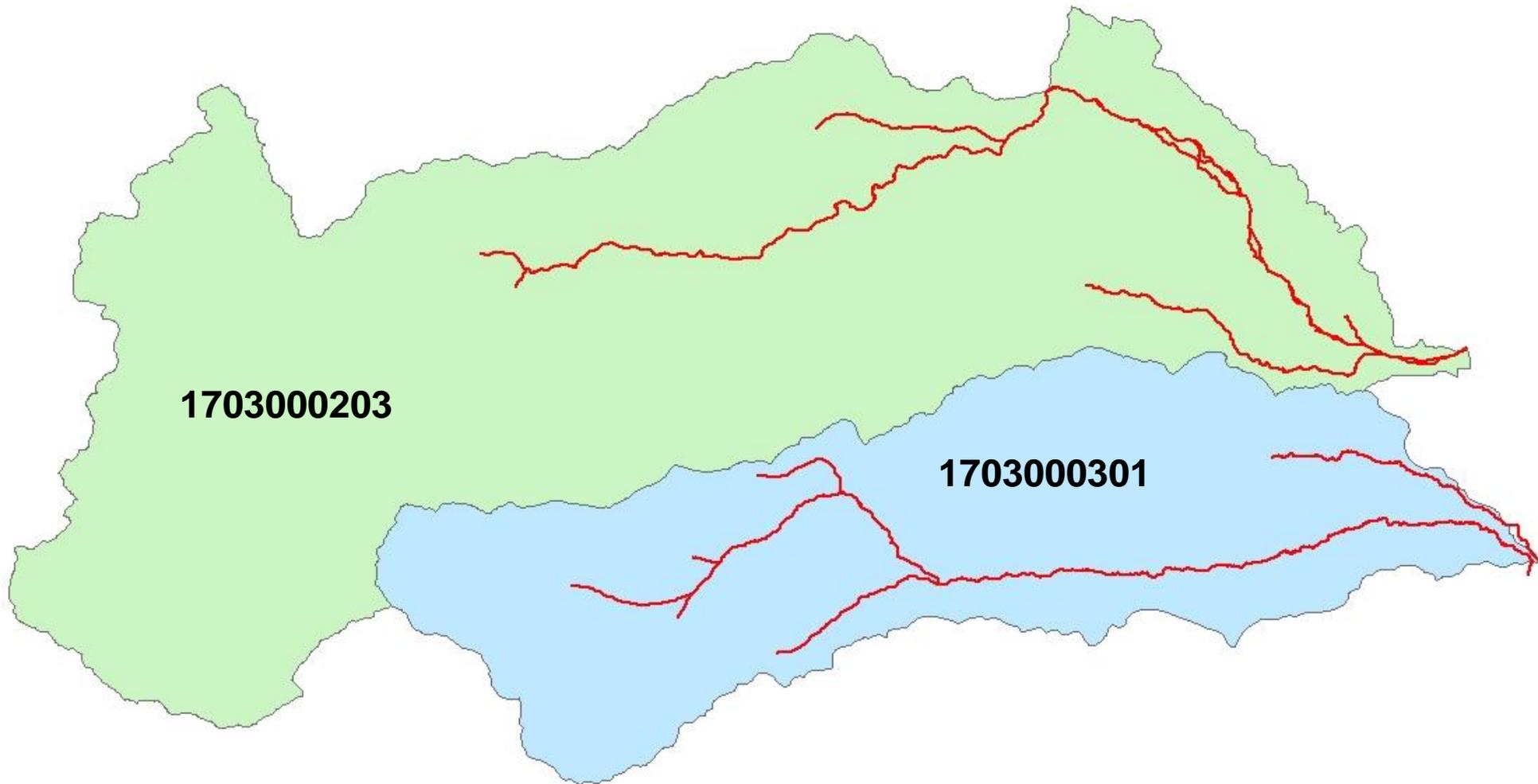




Map produced using data from Washington State Department of Agriculture 2011 GIS database available at: <http://agr.wa.gov/pestfert/natresources/aglanduse.aspx> as in previous slide

Map produced using GIS data for  
Middle Columbia Steelhead critical  
habitat from National Marine Fisheries  
Service' Northwest Region available  
at:  
[http://www.nwr.noaa.gov/1salmon/sal  
mesa/crithab/CHGISpage.html](http://www.nwr.noaa.gov/1salmon/sal<br/>mesa/crithab/CHGISpage.html)



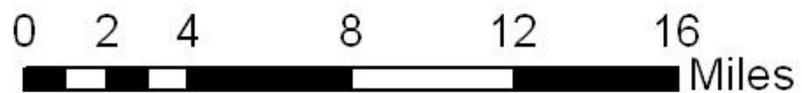


**1703000203**

**1703000301**

Map produced using GIS data for Middle Columbia Steelhead critical habitat from National Marine Fisheries Service' Northwest Region available

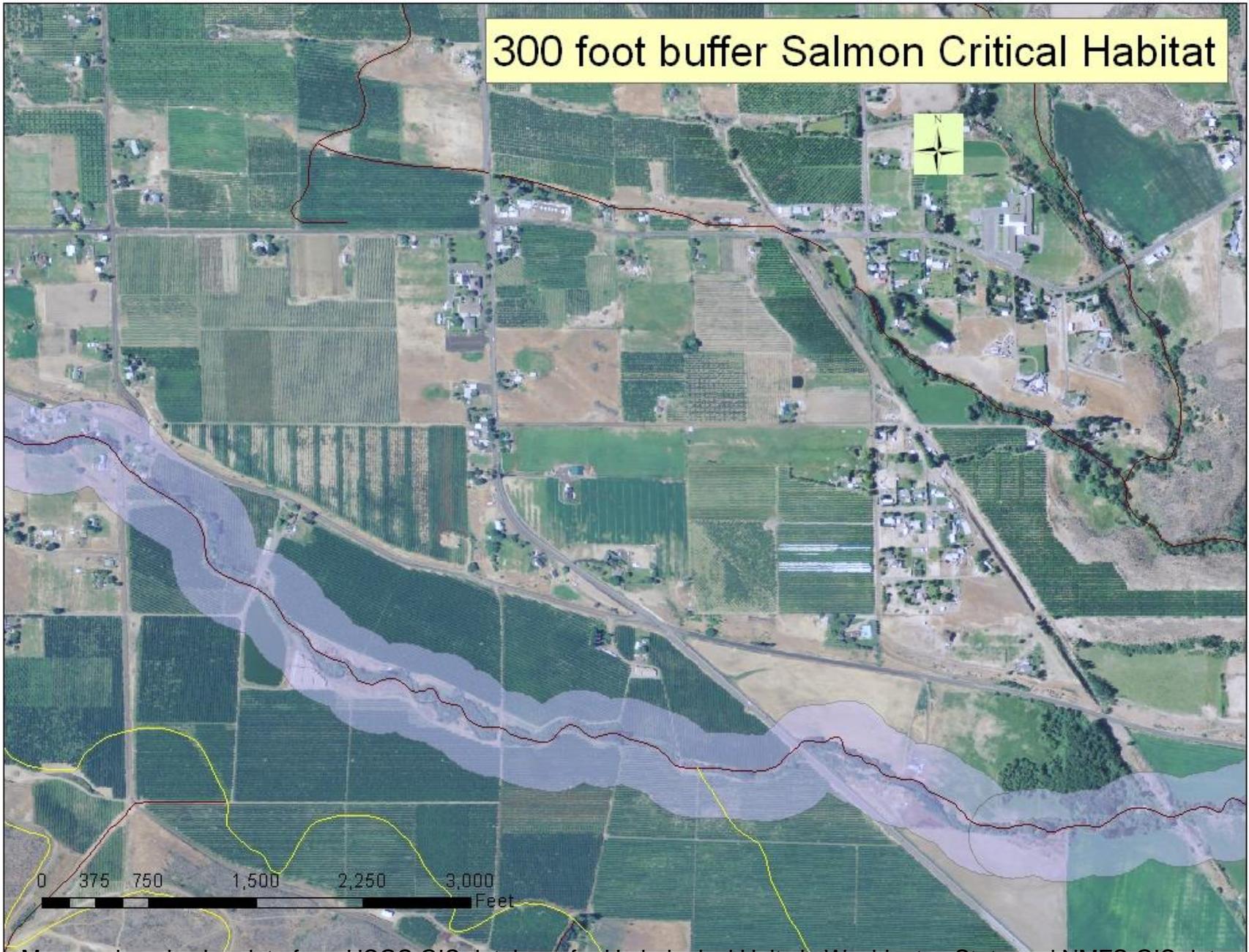
<http://www.nwr.noaa.gov/1salmon/salmonesa/crithab/CHGISpage.html>



# August 2005 NMFS Method

- Based on court injunction, NMFS assumed for all pesticides:
  - a buffer of 60 feet for ground application
  - a buffer of 300 feet for aerial application
  - Around “salmon supporting waters”
  - Buffer assumed to be land retirement
- Range:
  - High Cost (H)= all applications are aerial (300 ft)
  - Low Cost (L) = all applications are ground (60 ft)
- (Per acre costs)<sub>i</sub> = (net revenue)<sub>j</sub> ÷ (acres)<sub>j</sub> for
  - huc i = Yakima watersheds and
  - crop j = orchards, vegetables, grains
- Total Cost<sub>H or L</sub> =  $\sum_{ij} (\text{per acre costs})_{ij} \times \text{buffer}_{H \text{ or } L}$

# 300 foot buffer Salmon Critical Habitat

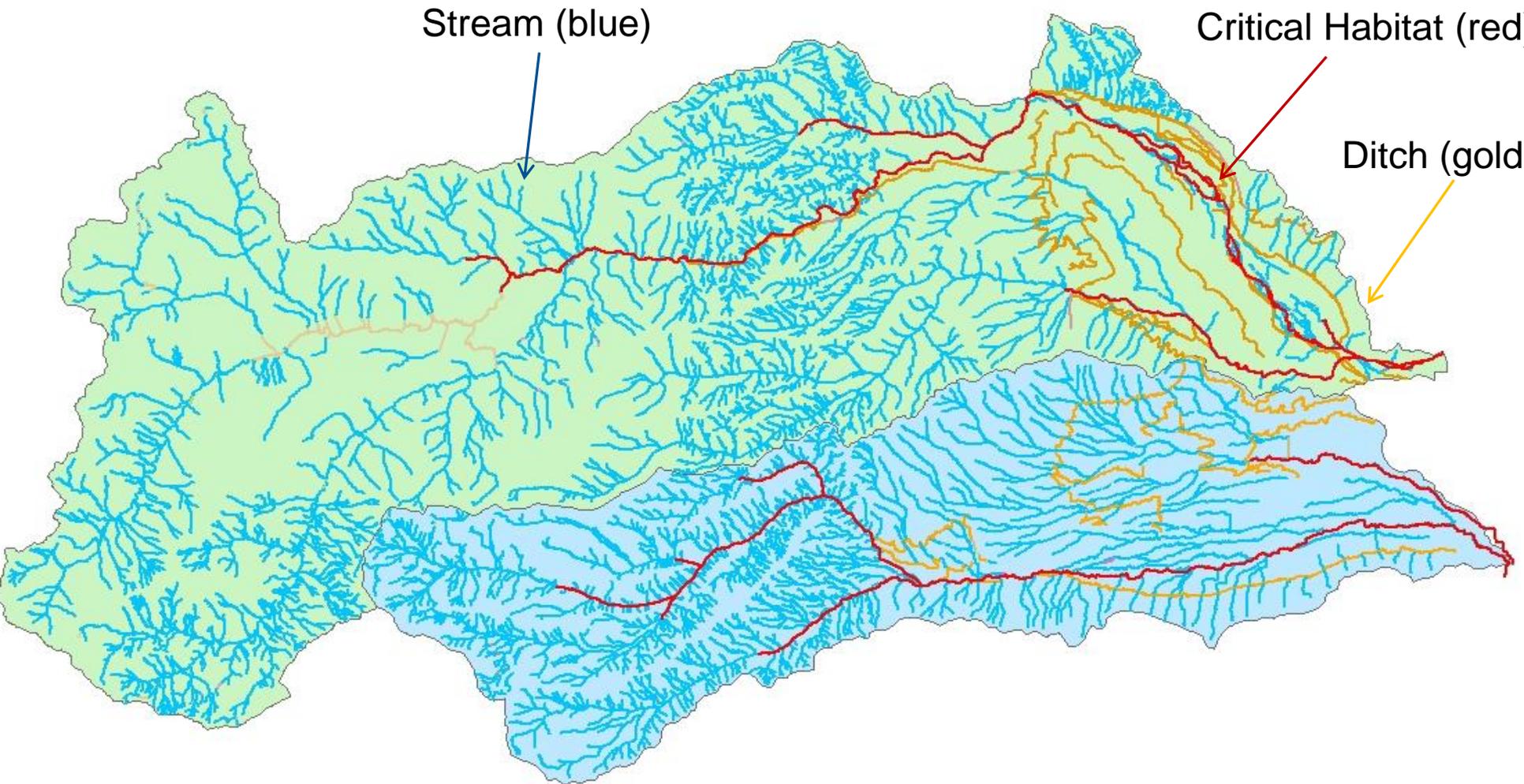


Map produced using data from USGS GIS database for Hydrological Units in Washington State and NMFS GIS data of critical habitat. Orthophoto from USDA Farm Service Agency, National Agriculture Imagery Program, 2009.

# What's Changed (i)?

Then: “Salmon-supporting waters” was interpreted by NMFS to mean actual waters that actually were occupied by the listed species.

Now: Pesticide applications are restricted in the BiOps to include all waters in the watershed, such as agricultural ditches.



Map produced using GIS data for Middle Columbia Steelhead critical habitat from National Marine Fisheries Service' Northwest region available at: <http://www.nwr.noaa.gov/1salmon/salmesa/crith/CHGISpage.html>

and GIS data from the Washington State Department of Natural Resources Washington State Watercourse Hydrography available at: <http://www2.wadnr.gov/dnrapp6/dataweb/dmm>

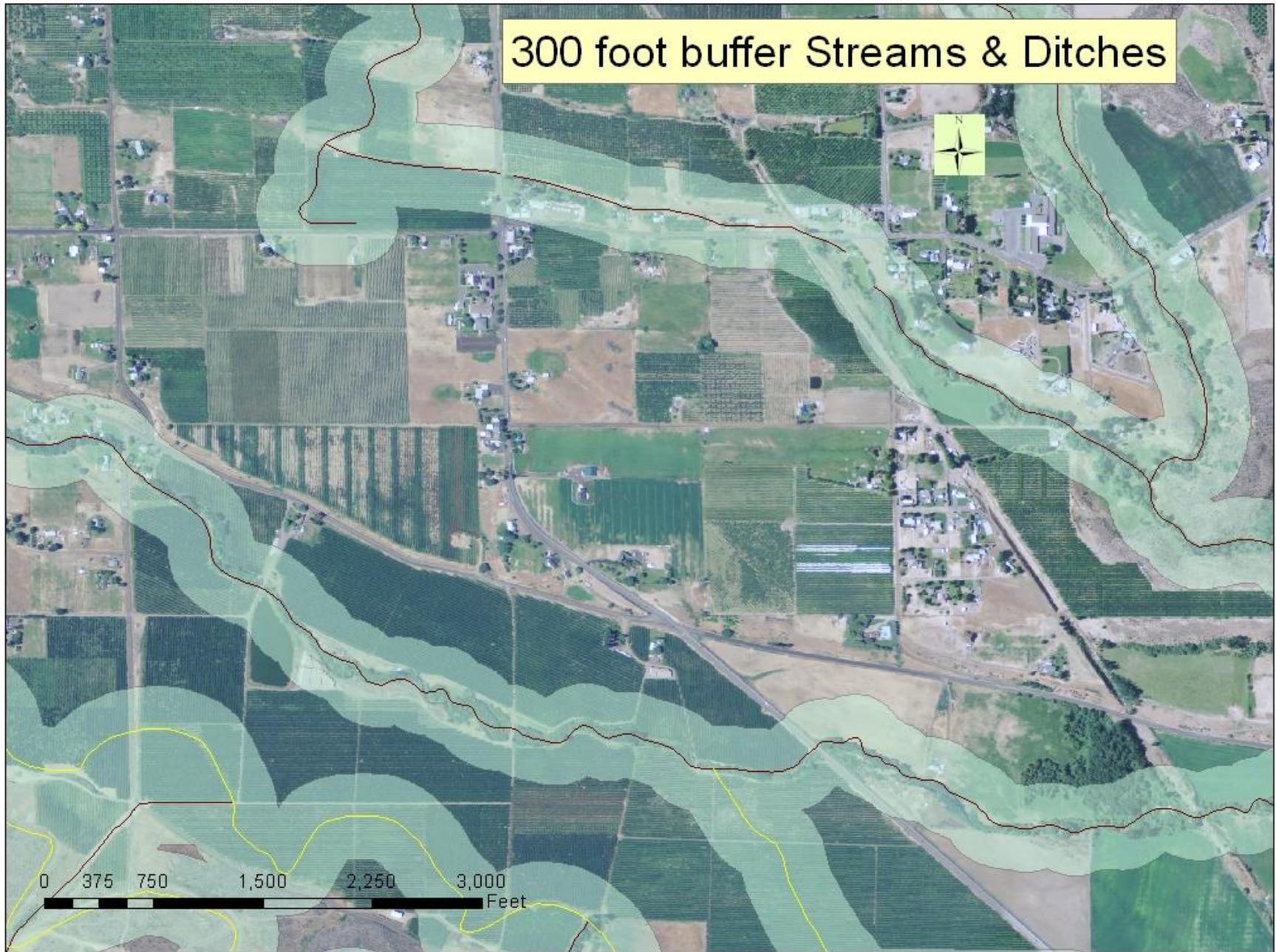
0 2 4 8 12 16 Miles

# What's Changed (ii)?

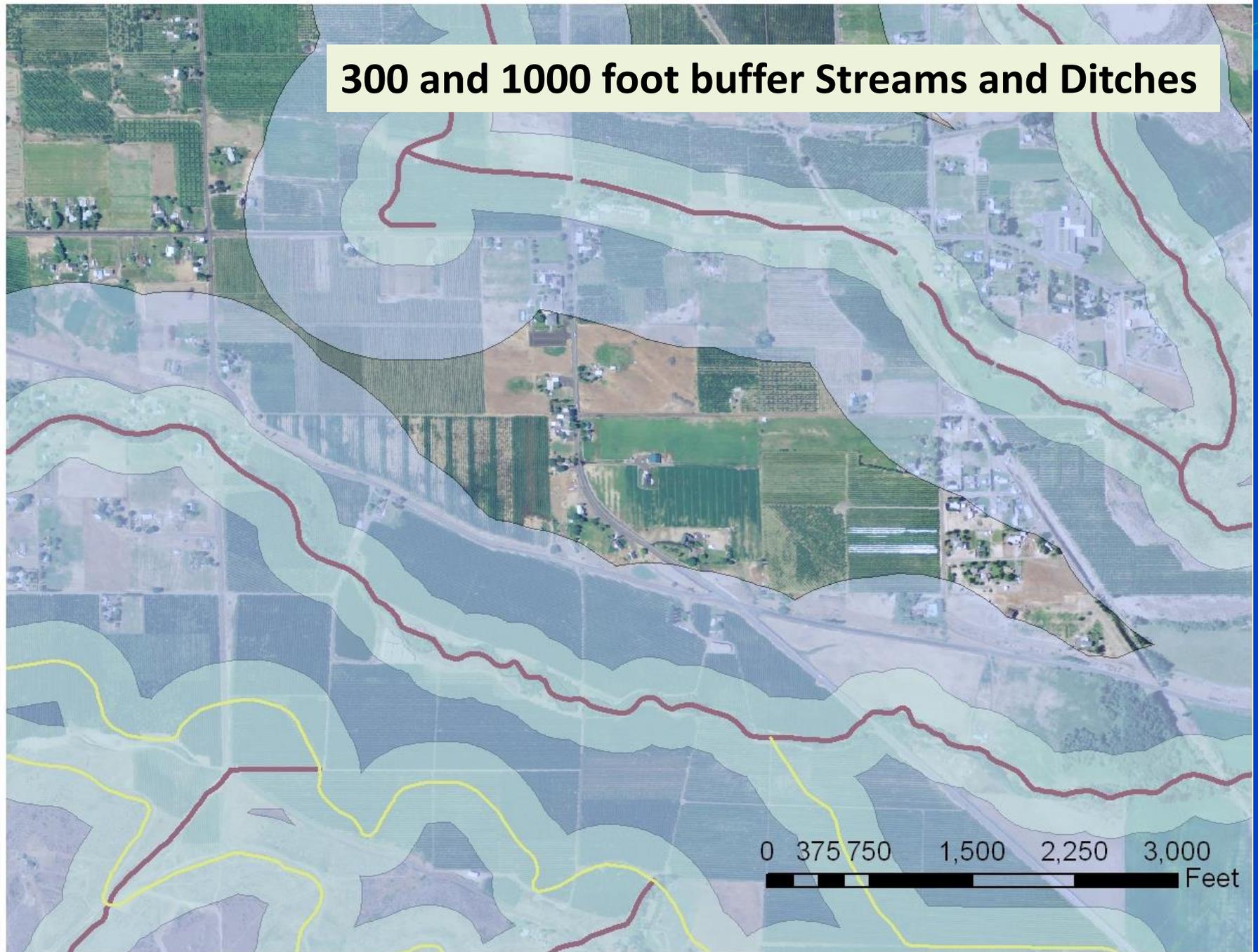
Then: Buffers were 60 ft to 300 ft

Now: Buffers are adjustable depending on concentration,  
but range from 25ft to 1000ft

# 300 foot buffer Streams & Ditches



# 300 and 1000 foot buffer Streams and Ditches



0 375 750 1,500 2,250 3,000 Feet

# Do those changes matter?

- Based on BiOps, assume:
  - a buffer of 25 feet for ground application (we do 60 feet)
  - a buffer of 1000 feet for aerial application
  - Around ALL WATERS
- Range:
  - High Cost (H) = all applications are aerial (1000 ft)
  - Low Cost (L) = all applications are ground (60 ft)
- (Per acre costs)<sub>i</sub> = (net revenue)<sub>j</sub> ÷ (acres)<sub>j</sub> for
  - huc i = Yakima watersheds and
  - crop j = orchards, vegetables, grains
- Total Cost<sub>H or L</sub> =  $\sum_{ij} (\text{per acre costs})_{ij} \times \text{buffer}_{H \text{ or } L}$

# Comparison 2005 and 2013

Watershed	2005 Acres	2005 Dollars	2013 Acres <sup>1</sup>	2005 Dollars <sup>2</sup>
203				
Low	165	\$102,035	1,192	\$848,230
High	817	\$457,931	16,209	\$11,132,549
301				
Low	187	\$170,653	1035	\$732,234
High	1,039	\$755,506	14,072	\$9,226,634

<sup>1</sup> 2013 Acres are acres of agricultural land uses within 60 ft (low) or 1000 ft (high) buffers of streams and ditches. Acres of crop types calculated using 2011 National Agricultural Statistics Service Cropland Data Layer for WA.

<sup>2</sup> 2005 Dollars estimated using average WA net operational dollar for orchards, row crops and field crops.

# Retrospective Review

## Maximizing Net Benefits

Efficient: Set the MB of the objective (species protection) equal to the MC of abatement measures. But we really don't know how much people value species preservation.

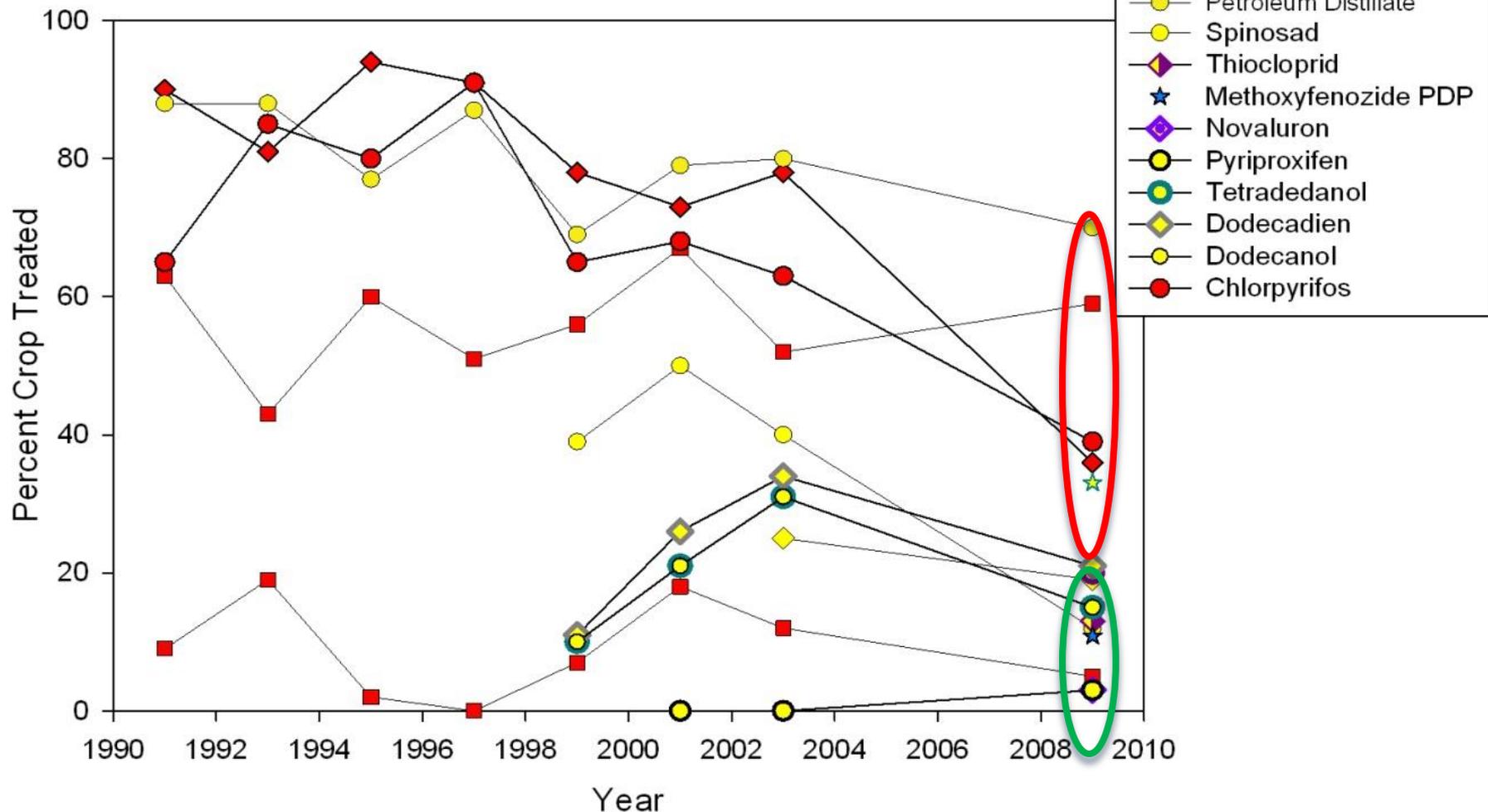
Cost Effective: Suppose you don't know what the benefits of species protection is, but that you only know that at some point species protection should be prioritized. Identify the least cost "reasonable and prudent" means to achieve that goal.

# Management options to limit adverse modification due to pesticide use

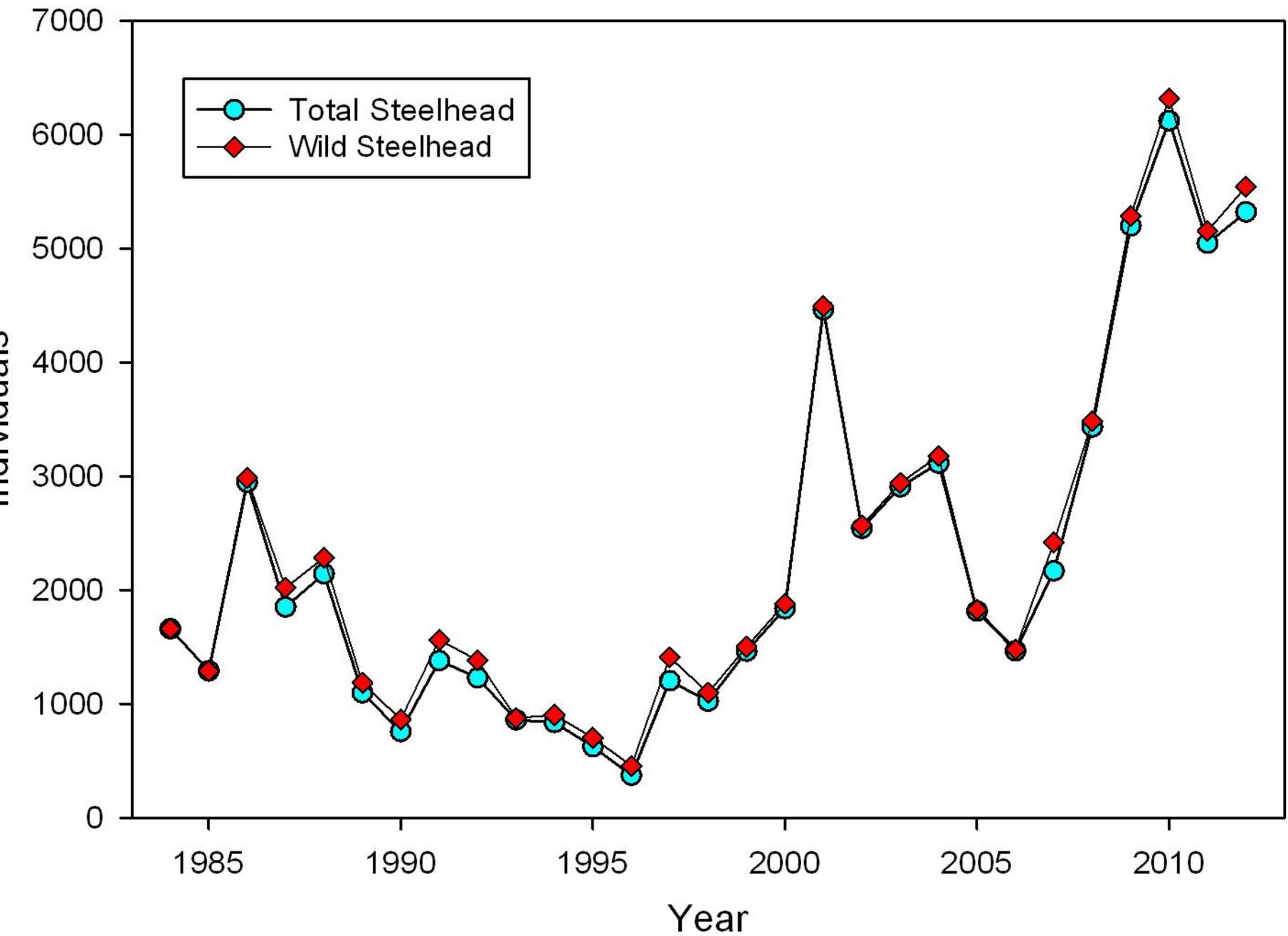
- Restrict pesticide applications (lower aggregate risk to species --- not simply each pesticide separately)
- Change spatial distribution of crops
- Habitat restoration (planting vegetative buffers / shade trees / minimizing sediment deposition)
- Conservation reserve (permanent easements --- essentially assumed in earlier methodology)

Percent of apple crop treated, National Agricultural Statistics Service Chemical Use Surveys, 1990 to 2009

### WA Codling Moth Pest Control



Percent of apple crop treated using pesticides included in WA Toxics (red) and subject to 60 or 300 ft buffers and newer pesticides (other colors). Red circle highlights older, less expensive pesticides; green – newer products



# Conclusion

1. Retrospective review allows agencies to look-back and make rules more efficient.
2. In instances when initial projections of costs and benefits have changed significantly over time, retrospective review can be useful and helps inform the public of the impacts of agency actions.
3. FWS and NMFS already conduct reviews of listing status and indicate that those reports are a good means to publish new information about the species and recovery plans.

# When might EO 13563 retrospective analysis be useful for ESA actions?

- When there has been a significant change in science or economic impacts due to unanticipated circumstances
- > BiOps have changed scope of area affected
- When there are cumulative impacts from other agency(ies)' actions
- > EPA's proposed FIFRA label restrictions
- When there is significant public participation in new issues governed by the original rulemaking
- > Public comment on BiOps and Pesticide Program Dialogue Committee + numerous court actions
- When there is already an ongoing review process.
- > 5-year review of listing status and of review of recovery plans.

# Take away's

1. In this case, the costs of critical habitat designation seem to have dramatically increased and the benefits may have declined.
  - BiOps have significantly expanded the affected agricultural areas.
  - Salmon populations have increased
2. What might a retrospective review of the listing and critical habitat designation find?
  - Measures to protect the species that are “prudent and reasonable” might include other alternatives than land retirement, such as
    - planting vegetative buffers;
    - limiting pesticide application methods or times; or even
    - Cultivation of pest-resistant varieties or different crops.

# Next steps

- National Academies of Sciences panel plans to complete an assessment of Ecological Risk Under FIFRA and ESA this year.
- EPA issued proposal for enhancing stakeholder input in development of reasonable and prudent alternatives.
- Continuing dialog between stakeholders and EPA and NMFS in the Pacific Northwest.
- Services are reviewing the process for designating critical habitat to develop a more efficient, defensible, and consistent processes.

**1999 – Middle  
Columbia Steelhead  
listed as threatened**

**2005 – Critical Habitat  
Proposed**

**Draft Economic  
Analysis**

**2005 – Final Critical  
Habitat**

**Final Economic  
Analysis**

**20?? – Retrospective  
review of listing and CH**

**2003 – Washington  
Toxics Court orders EPA  
to consult with NMFS  
and imposes no-spray  
buffers prior to  
consultation**

**2008 - NMFS issues  
BiOps with no-spray  
buffers for first 6 ai**

**2012 -BiOps challenged  
in one court; another  
court orders EPA to  
implement measures in  
BiOps**

