

Comments US

# GRIZZLY BEARS AND WHITEBARK PINE IN THE GREATER YELLOWSTONE ECOSYSTEM

## PROJECT OUTLINE

### INTERAGENCY GRIZZLY BEAR STUDY TEAM

#### 1) Whitebark Pine Ecology

##### a. Whitebark pine status and trends in the GYE

- i. Leads: Kristin Legg (NPS-IM), Kathy Irvine (USGS-NOROCK), Dan Tyres (USFS).
- ii. Status and timeline: in progress, ms. submission by 1 Mar 2013.
- iii. Funding: IM project funded through FY12; additional funding desired for USFS project Beartooth Mtns. (\$15,000 for 2012 WBP transects data collection and completion of analysis and write-up for 1990-2012 or \$7,500 only for analysis and write-up of 1990-2011 data).
- iv. Products: peer-reviewed paper(s).

✓ Check fully funded FWS

##### b. Future status of whitebark pine (literature review focused on rust resistance, MPB trend predictions, climate change)

- i. Lead: Mahalovich (USFS).
- ii. Status and timeline: August 2013 ?
- iii. Funding: need unknown
- iv. Products: chapter for synthesis document

Sulfur isotopes  
Also?  
re: clutch?

##### c. Brown bear diets and stone pines (literature review)

- i. Lead: Gunther (with Cain, van Manen)
- ii. Status and timeline: August 2013
- iii. Funding: not required
- iv. Products: chapter for synthesis document

John Molloy w/ assistance  
maybe John

#### 2) Ecological plasticity of grizzly bears in the Greater Yellowstone Ecosystem

##### a. Diet, resource use, home ranges, and body condition

##### i. *Grizzly bear diets in the GYE: alternative foods in a temporally and spatially variable landscape.*

- 1. Lead: Schwartz (with Podruzny, others?)
- 2. Status and timeline: 1 manuscript submitted (Fortin et al.), 1 manuscript in progress (Podruzny et al.)
- 3. Funding: additional funding for Schwartz

carcass use

we will pay  
in arrears in N<sub>2</sub> over time

4. Products: Diet items from isotope manuscript in progress. Food items use from site visits, 1 manuscript submitted (Fortin et al.), 1 manuscript in progress (Podruzny et al.)
- ii. ***Grizzly bear use of large ungulates identified from GPS location clusters: trends related to ungulate numbers, wolves, and whitebark pine decline***
    1. Lead: Ebinger (with Haroldson, van Manen, P.J. White? Gunther, and D. Smith?)
    2. Status and timeline: in progress, ms. submission by 1 Mar 2013
    3. Funding: additional funding for Ebinger
    4. Product: peer-reviewed paper
  - iii. ***Grizzly bear use of whitebark pine stands and trends in the face of whitebark pine decline (discrete choice analysis)***
    1. Lead: van Manen (with Ebinger, Haroldson)
    2. Status and timeline: in progress, ms. submission by 1 Mar 2013
    3. Funding: additional funding for Ebinger
    4. Product: peer-reviewed paper
  - iv. ***Indices of grizzly bear home-range size in the GYE: patterns and trends related to variable foods and population increases***
    1. Lead: Bjornlie (with Haroldson, Thompson, van Manen)
    2. Status and timeline: in progress, ms submission by 1 March 2013
    3. Funding: not required
    4. Product: peer reviewed paper
  - v. ***Grizzly bear body condition (% fat) in a changing landscape: Are grizzly bears in the GYE getting what they need in the face of increasing bear densities and changing food resources?***
    1. Lead: Haroldson (with van Manen, Bjornlie, Thompson)
    2. Status and timeline: in progress, ms submission by 1 March 2013
    3. Funding: not required
    4. Product: peer reviewed paper

**b. Population Demographics**

***i. Recent trends in grizzly bear vital rates and population growth in the GYE: can we distinguish density versus whitebark pine effects?***

1. Lead: van Manen (with Haroldson, Bjornlie, Thompson, G. White)
2. Status and timeline: in progress, ms. submission by 1 Mar 2013
3. Funding: additional funding for G. White.
4. Product: peer-reviewed paper(s)

***ii. Predictors of fall mortalities: what drives numbers of fall grizzly bear mortalities in the GYE (population size, range expansion, whitebark pine cone abundance, other factors, or combination of these factors)?***

1. Lead: Haroldson (with van Manen, Higgs)
2. Status and timeline: in progress, ms. submission by 1 Mar 2013
3. Funding: additional funding for Higgs.
4. Product: peer-reviewed paper(s)

**3) Synthesis Analysis and Final Report**

***a. Lead: van Manen (with entire IGBST)***

***b. Timeline: Start 1 March 2013; completion 31 October 2013***

***c. Final report to FWS***

***d. Preliminary report outline***

***i. Executive Summary***

***ii. Introduction***

***iii. Whitebark pine in the GYE***

1. ***Whitebark pine ecology***
2. ***Whitebark pine status and trend***
3. ***Future of whitebark pine in the GYE***

***iv. Grizzly bears and whitebark pine decline in the GYE: synthesis of research findings***

1. ***Individual level***
2. ***Population level***

**v. Management Implications**

**vi. Conclusions**

**Other items from 'WBP strawman':**

- Density dependence and WBP (?): Note: to be addressed in discussion of Synthesis Report
- Contrast GYE with other ecosystems (?) Note: could be addressed in synthesis report

Density regulation effects including what happens with high population density and high densities of males and how this would change population structure and survival by age class.