



# Beak deformities in wild birds in Alaska



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USGS Alaska Science Center

# *Anchorage Daily News*

March 2, 1998

Story by Anne Coray



First reports

Nov 1997 – Mar 1998

Anchorage, Big Lake

Received increasing number of reports  
from biologists, members of the public

Multiple species apparently affected

Needed to learn more  
about this problem in  
Alaskan birds!





# Field research & public observation reports



# Black-capped Chickadees (*Poecile atricapillus*)



6.5% ( $\pm 0.5$ )



Normal background level in wild birds:  $<0.5\%$

# Northwestern Crows (*Corvus caurinus*)



16.9% ( $\pm 5.3$ )



# Nuthatches



# Jays, Magpies, Ravens





# Woodpeckers



Photo by Terri Joron



Photo by Anni Porto

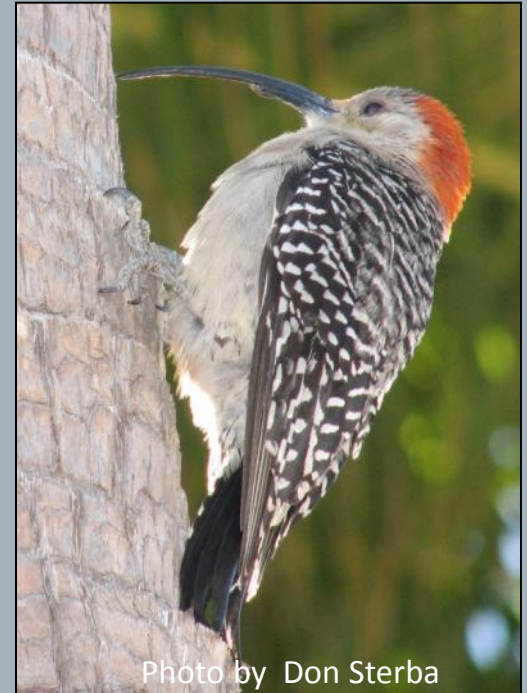


Photo by Don Sterba



Photo by Ralph Van Dusseldorp



Photo by Ron McCoy

# Red-tailed hawks



Photo by Bud Anderson

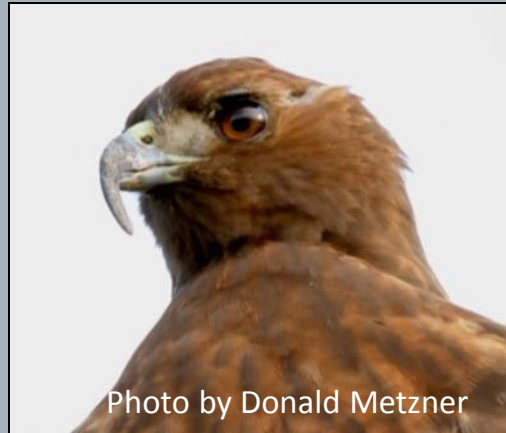


Photo by Donald Metzner



Photo by Lacey Hartje



Photo by Steve Mlodinow

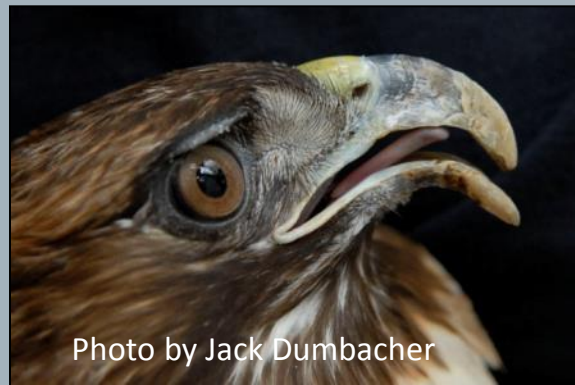
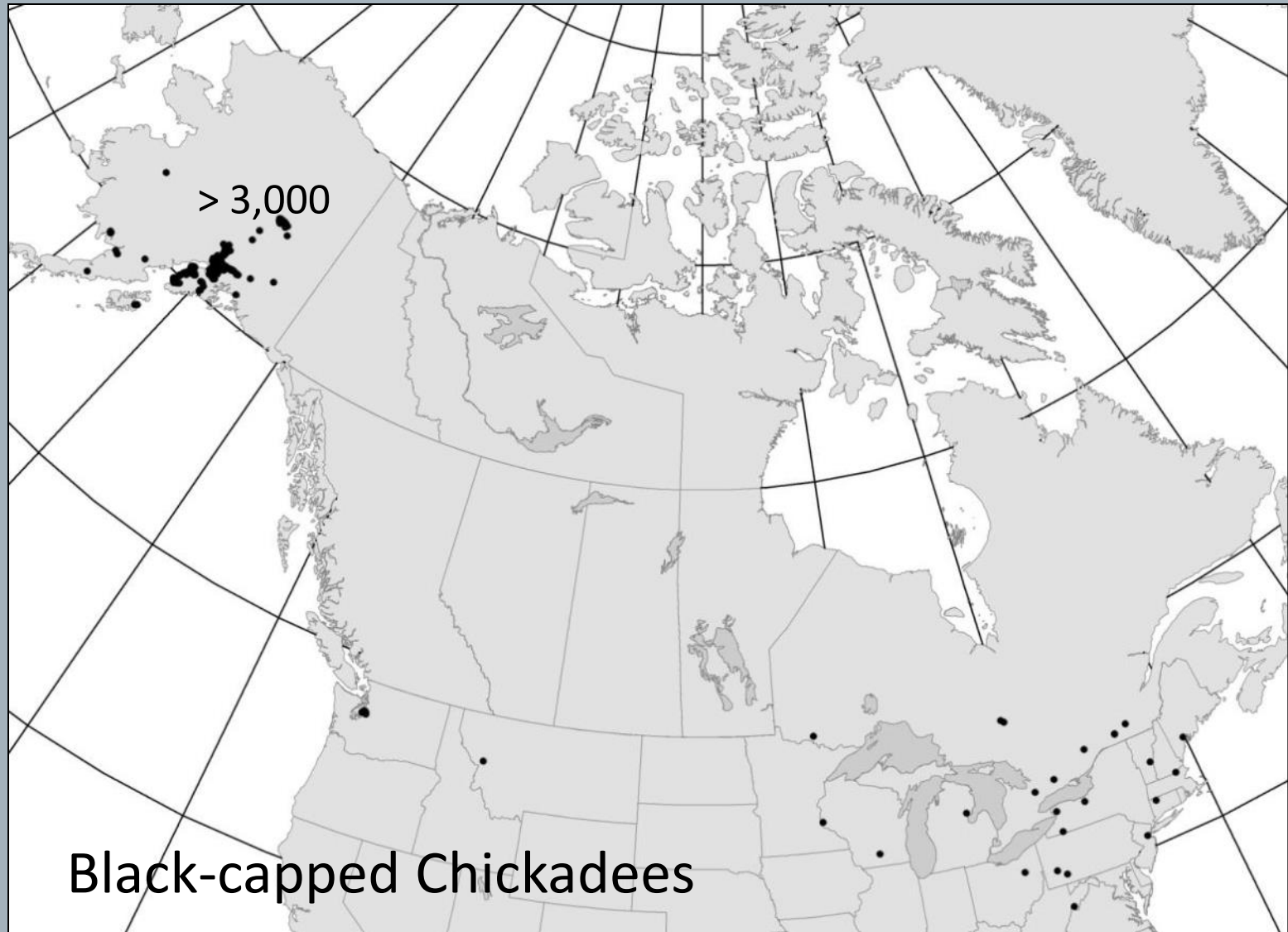


Photo by Jack Dumbacher

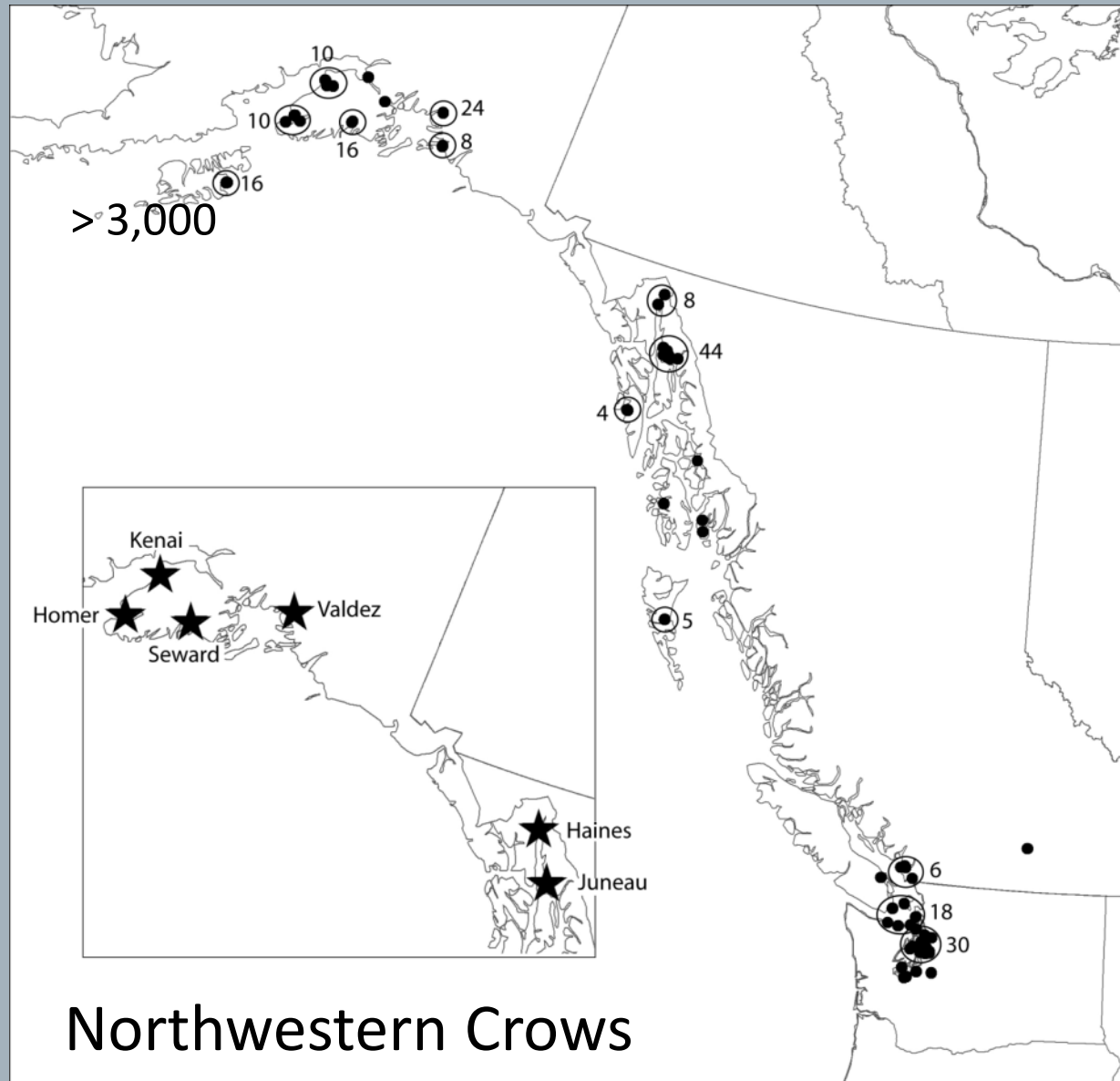
British Columbia, Washington, Oregon

# Where do deformities occur?

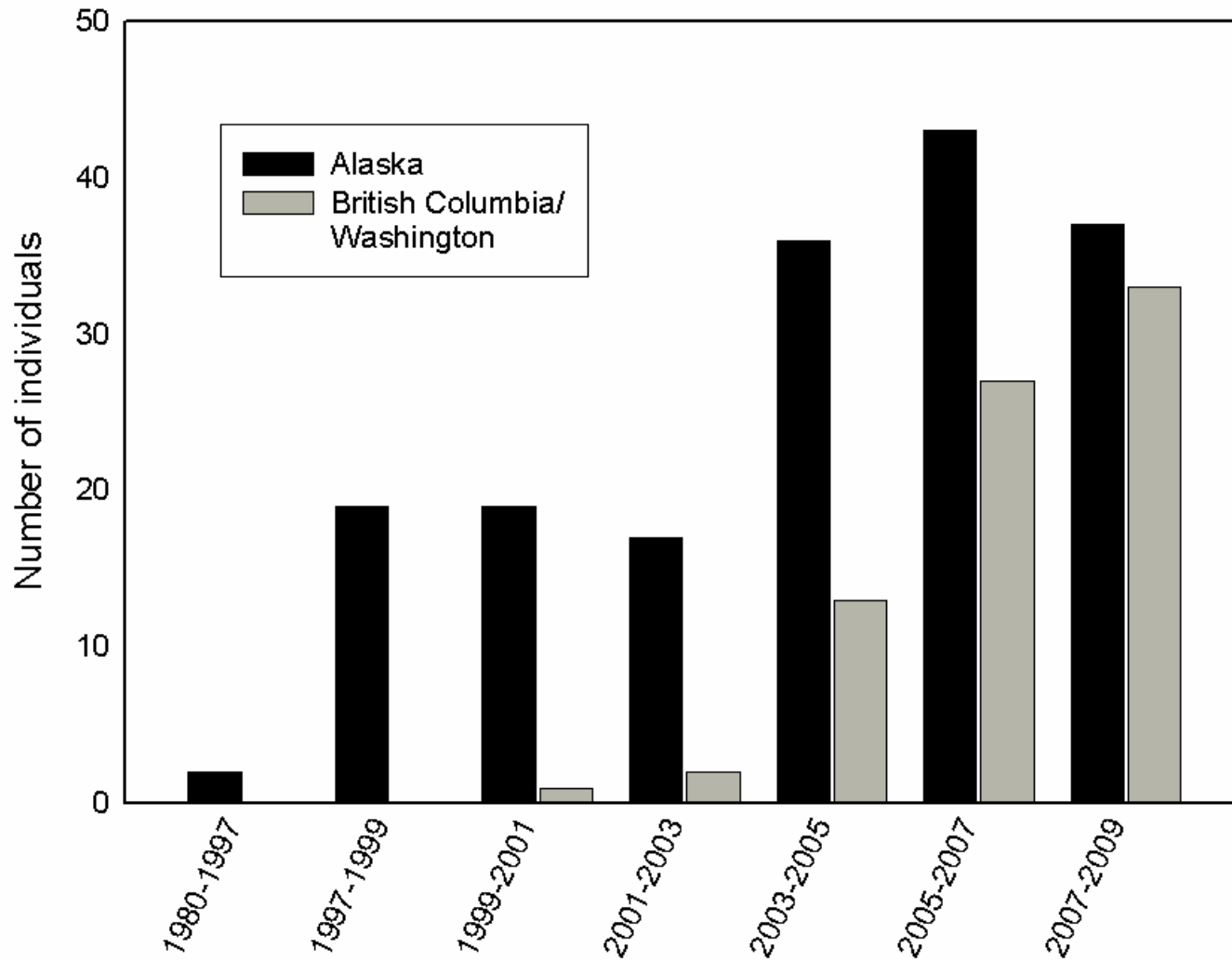




# Where do deformities occur?



# Geographic “spread” in AK/Pacific NW?



## Other locations: Northern Europe





## Local clusters

## Northern Europe



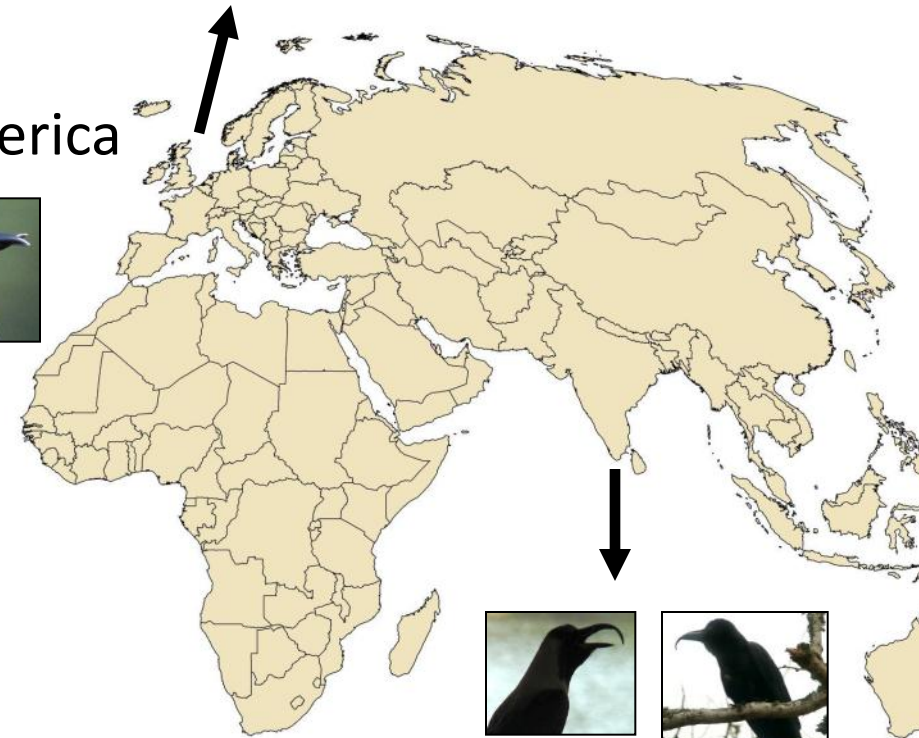
## Rest of N. America



## Alaska/Pacific NW



## Chile, Peru, Ecuador



## India

## Global spread?



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Les acteurs amér  
ont fait un don d  
(1,5 million d'eur  
namibienne où i  
enfants. Le don a  
filie adoptive Sh

## En Alaska, de plus en plus d'oiseaux ont le bec défo

Mots clés : Oiseaux, Bec Déformé, Kératine Aviaire, Alaska, US Geo

Par Yves Miserey

### Freakish Bird Beaks Perplex Experts

2/11/2011 10:46:20 AM

by Keith Goetzman

Tags: [wildlife](#), [birds](#), [birdwatching](#), [beaks](#), [deformities](#), [Birder's World](#), [Goetzman](#)

### Scientists Probe Beak Trouble in Alaskan and Northwest

The New York Times

Dot Earth

ANDREW REVKIN

NOVEMBER 8, 2010, 6:56 PM

### Scientists Probe Beak Trouble in Alaskan and

By ANDREW C. REVKIN

Nov. 10, 11:55 p.m. | Updated

Federal biologists are intensifying research on a large deformed beaks in a wide range of bird species from Alaska to British Columbia. The deformities reduce the birds' ability to feed, according to the scientists, from the United States Geological Survey. I've posted an interview with two of the biologists.]

#### Bird Sleuths in Northwest Stymied by Deformities

Shared by NYTimes DotEarth - Two biologists discuss what is causing deformities in birds in the northwest.

## Deformed bird beaks trigger environmental hunt

Birds with curved shapes in Alaska, Northwest are 10 times the norm, study finds



Photo: Ron Horn

USGS via AP  
This Northwestern crow, spotted in Juneau, Alaska, is among those affected by avian keratin disorder.

Handel and wildlife biologist Caroline Van Hemert published their findings in The Auk, a Quarterly Journal of Ornithology. They captured Alaska crows in six coastal locations and used documented reports and

USA TODAY

## Scientists: Beak deformities increase in Northwest

Posted 11/9/2010 11:59 AM

By Dan Joling, Associated Press



By AP

### Deformed bird beaks trigger e

- msnbc.com



Shared by Environmental  
beak abnormalities ever r  
msnbc.msn.com - Similar

### Scientists Probe Beak Troubl

NYTimes.com



Shared by NYTimes Dot  
Pacific Northwest have t  
dotearth.blogs.nytimes.com -

### The Associated Press: Scie



Shared by EHP Journal  
increase in Northwest  
google.com - Similar

### USGS Release: Deformed E



Shared by High Count  
recorded in wild bird p

L'énigme des becs difformes des oiseaux d'Alaska

What are deformities?

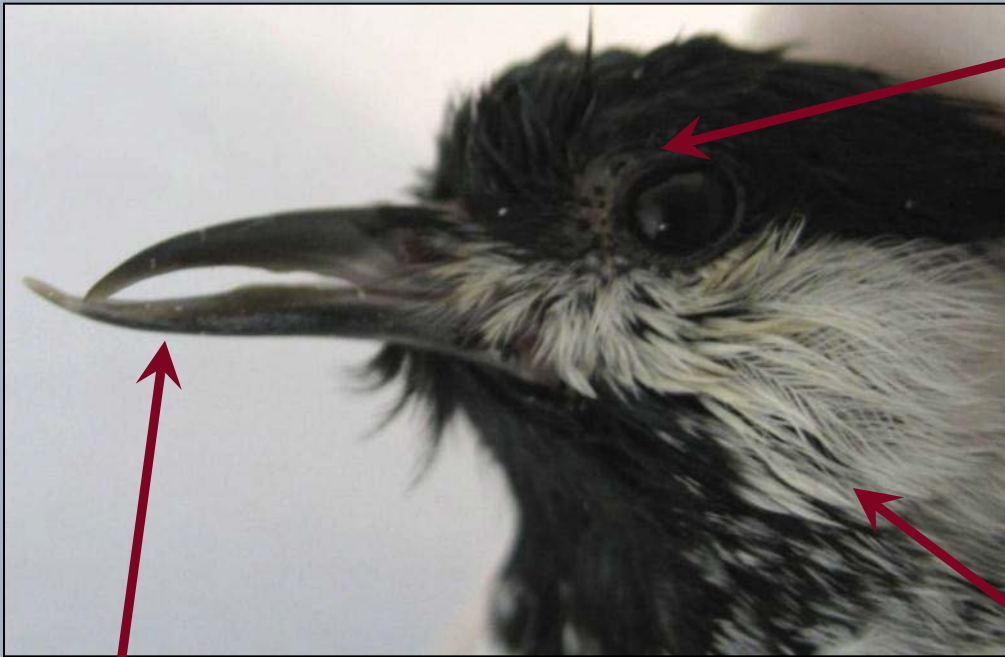


How do they develop?

Photo by Ken Whitten



# Clinical signs...the doctor's report



**Beak  
overgrowth**

Skin problems,  
feather loss



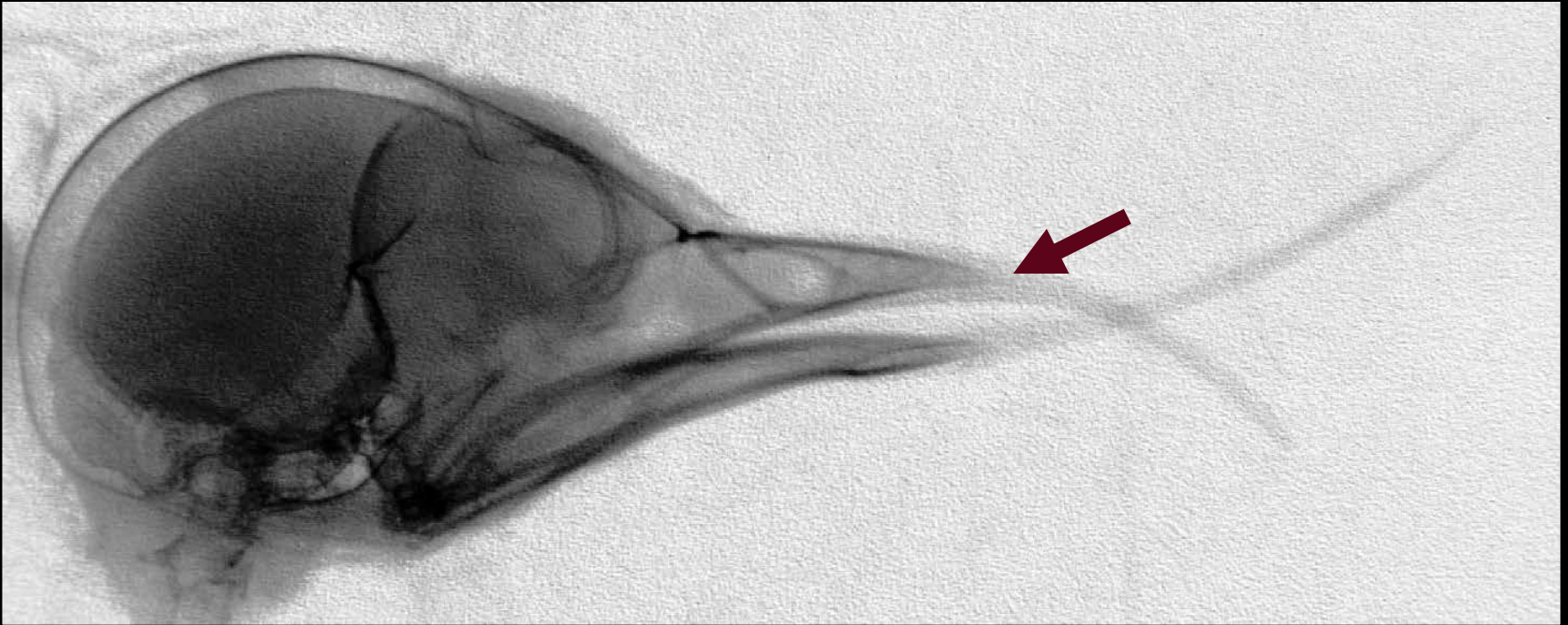
Irregular,  
discolored  
keratin



Abnormal feathers



# What part of beak affected?



Underlying bone normal

Overgrowth of beak keratin

# Development of deformities



Arise in adult birds

Change in state from  
“normal” to “affected”



Caused by very rapid  
keratin growth



# Effects on birds: “So what”?

Diet

Plumage

Reproduction

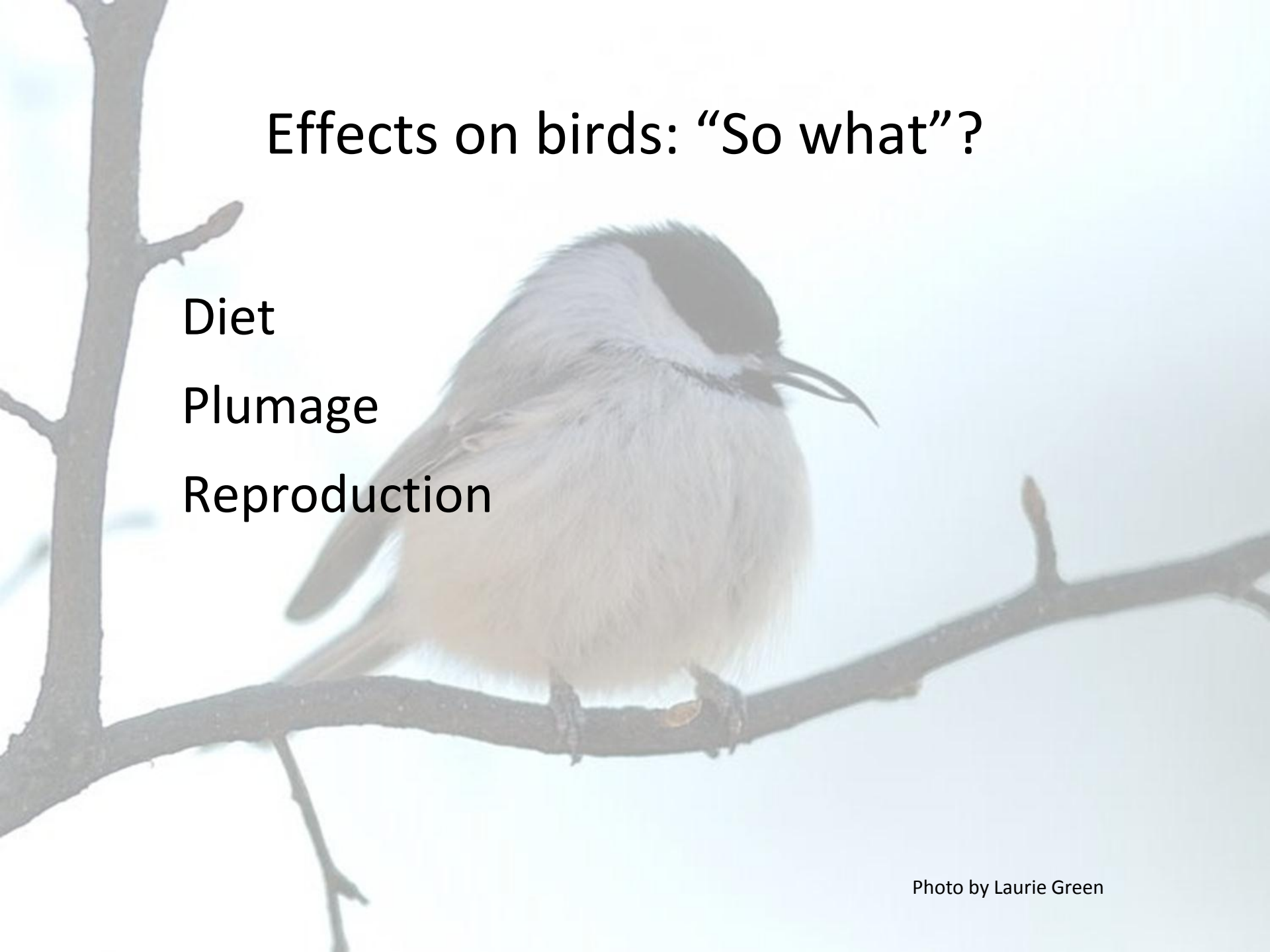


Photo by Laurie Green

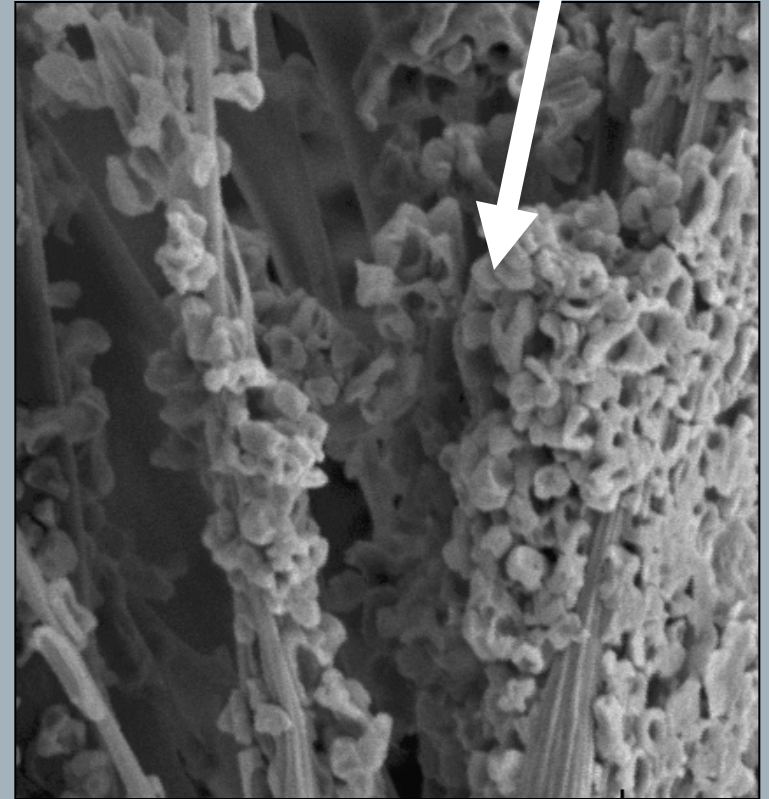
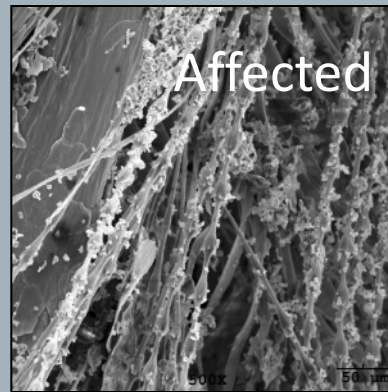
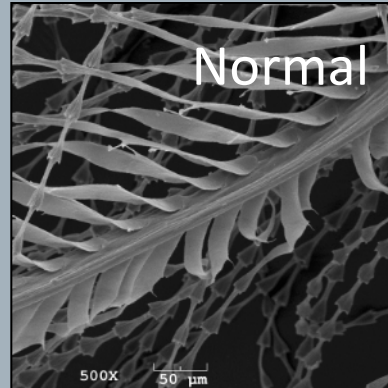
# Differences in diet



Photos by D. Quick, S. Fenn, S. Shiesl, T. Schantz

Consequence, not cause, of deformities.

# Effects on birds: Plumage



Compromised preening, dirty feathers  
Difficulty staying warm and dry





# Effects on birds: Reproduction

## Females

Nested later in season  
Fewer eggs hatched  
Raised fewer young



## Males

Fewer young survived  
More egg “dumping”



# Possible causes?

## What we've ruled out:

- Feeder foods/nutrition
- Fungal, bacterial infection
- Mites/parasites
- Metals, other contaminants
- Other known diseases
- Genetics



# Possible causes?

## Ongoing research:

- Unknown/novel virus
- Emerging contaminants?
- Multiple stressors?





# You can help by reporting beak deformities:

[http://alaska.usgs.gov/science/biology/landbirds/beak\\_deformity](http://alaska.usgs.gov/science/biology/landbirds/beak_deformity)  
(Or Google Search: USGS Beak Deformities)



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### Beak Deformity Observation Report

**Observer Contact (This information will remain confidential)**  
Name:   
Email Address:   
Phone Number:   
Street Address/P.O. Box:   
City:   
State/Province:   
Zip Code/Postal Code:   
Country (if not in U.S.):

Date(s) of Observation:   
Species:   
Number of deformed individuals:

**Location of Observation**  
Address/Nearest Cross-Streets:   
City:   
State/Province:

file:///N:/science/biology/landbirds/beak\_deformity/observreport.html (1 of 3)12/4/2006 2:04:39 PM

Description of Deformity: Please provide a brief physical description of abnormal beak growth. Is the beak unusually long or short? Are the top and bottom parts of the beak crossed or curved? If so, how severely and in which direction? If possible, estimate length (or relative proportion) of the beak and any over- or under-bite.

Habitat: Describe habitat where bird was observed (e.g. intertidal zone, coniferous forest, feeder, dumpster, etc.)

Behavior: Describe behavior of deformed bird (e.g. feeding, roosting, walking, etc.)

Flock Composition: Describe the number of birds in the flock and any unusual interactions. If bird was alone, please note this.

Other Information: Please include any other information that may be relevant to this observation.

#### Photos

Do you have any photos of the beak deformity?

If yes, type:  (Hold down the Ctrl key to choose multiple options)

If digital, please send to: [GS-AK\\_Beak\\_Deformity@usgs.gov](mailto:GS-AK_Beak_Deformity@usgs.gov) using the Report ID given on web page after clicking "Submit" below.

If print, slides, or negatives, please send to:  
Caroline Van Hemert  
USGS Alaska Science Center  
1011 E Tudor Rd., MS701  
Anchorage, AK 99503

*\*The photo contact information is repeated on the submission page.*

Would you like to be informed via email of future developments or additional information about bill deformity research? If yes, please be sure your email address is provided above.

# Questions or Comments?



Photo by Mary Zalar

THANKS!