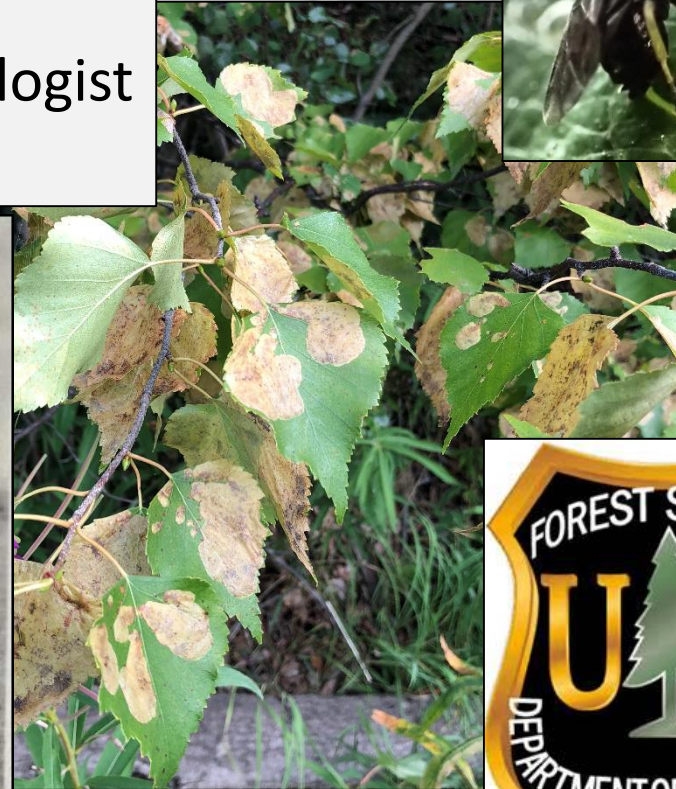
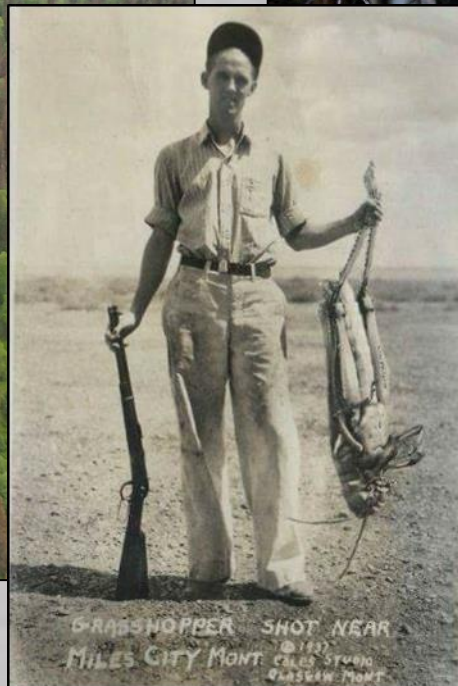
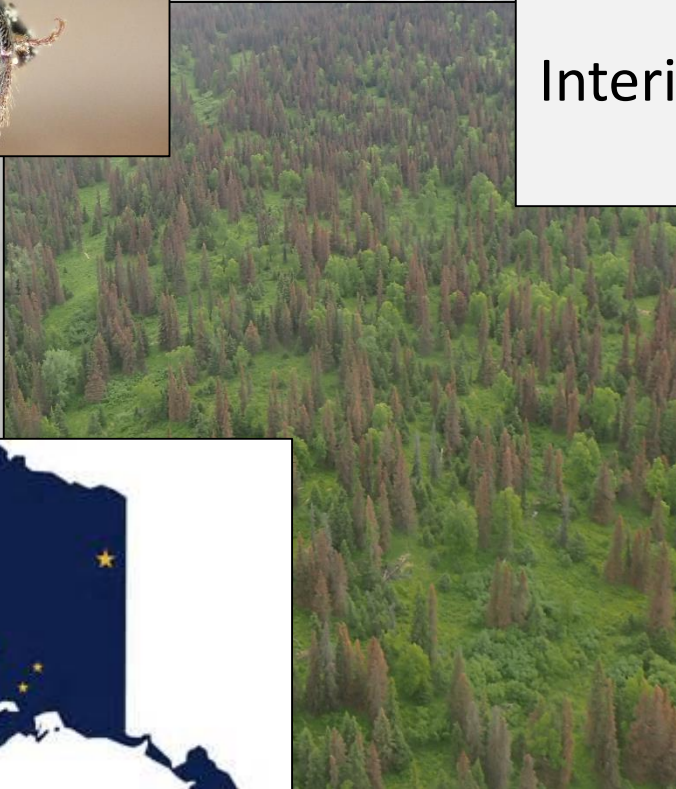


# Forest Health Conditions Report 2018

Stephen J. Burr  
Interior Forest Entomologist  
& R10 Staff

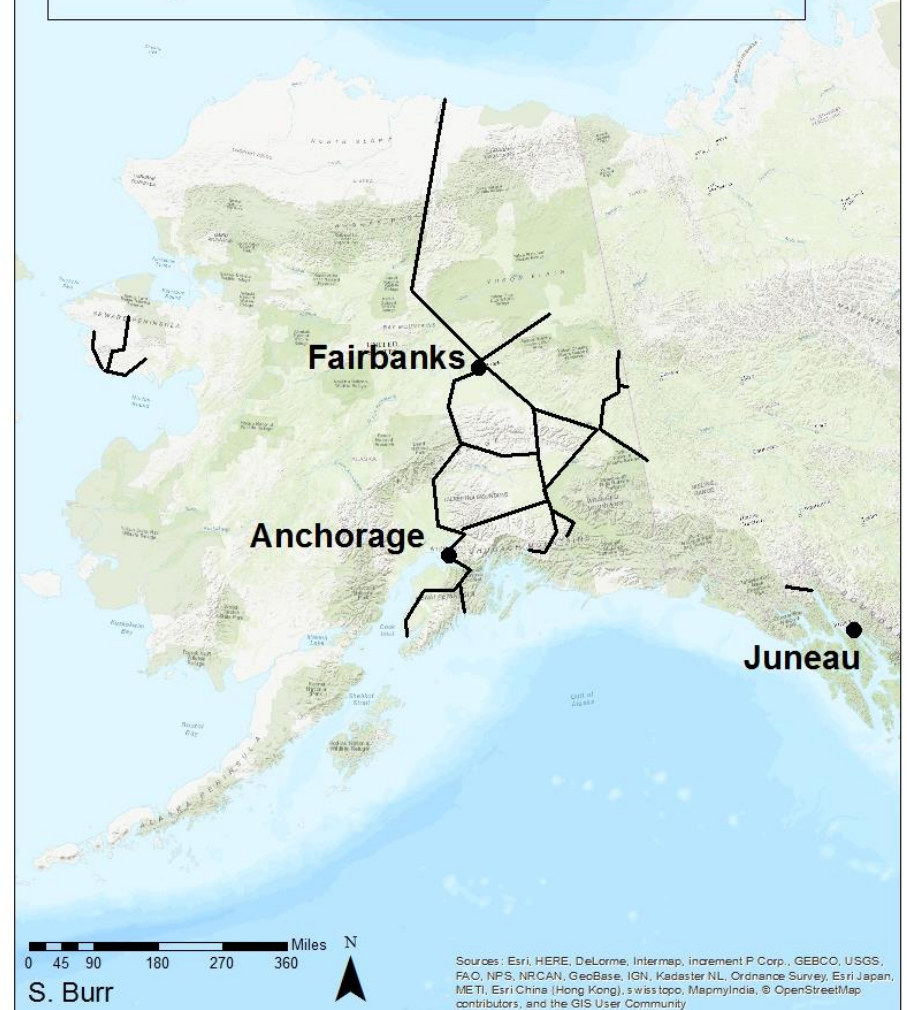




# Alaska Region FHP

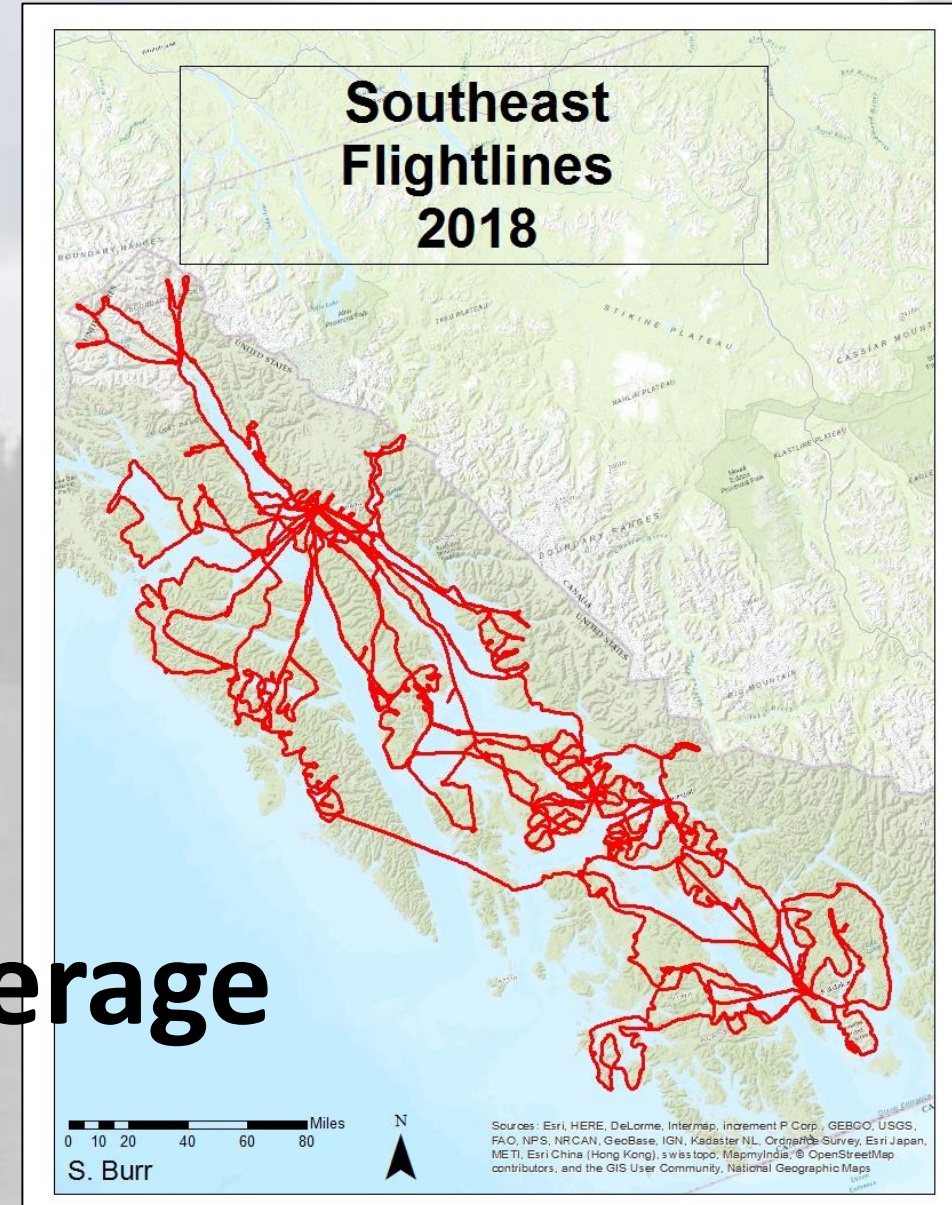
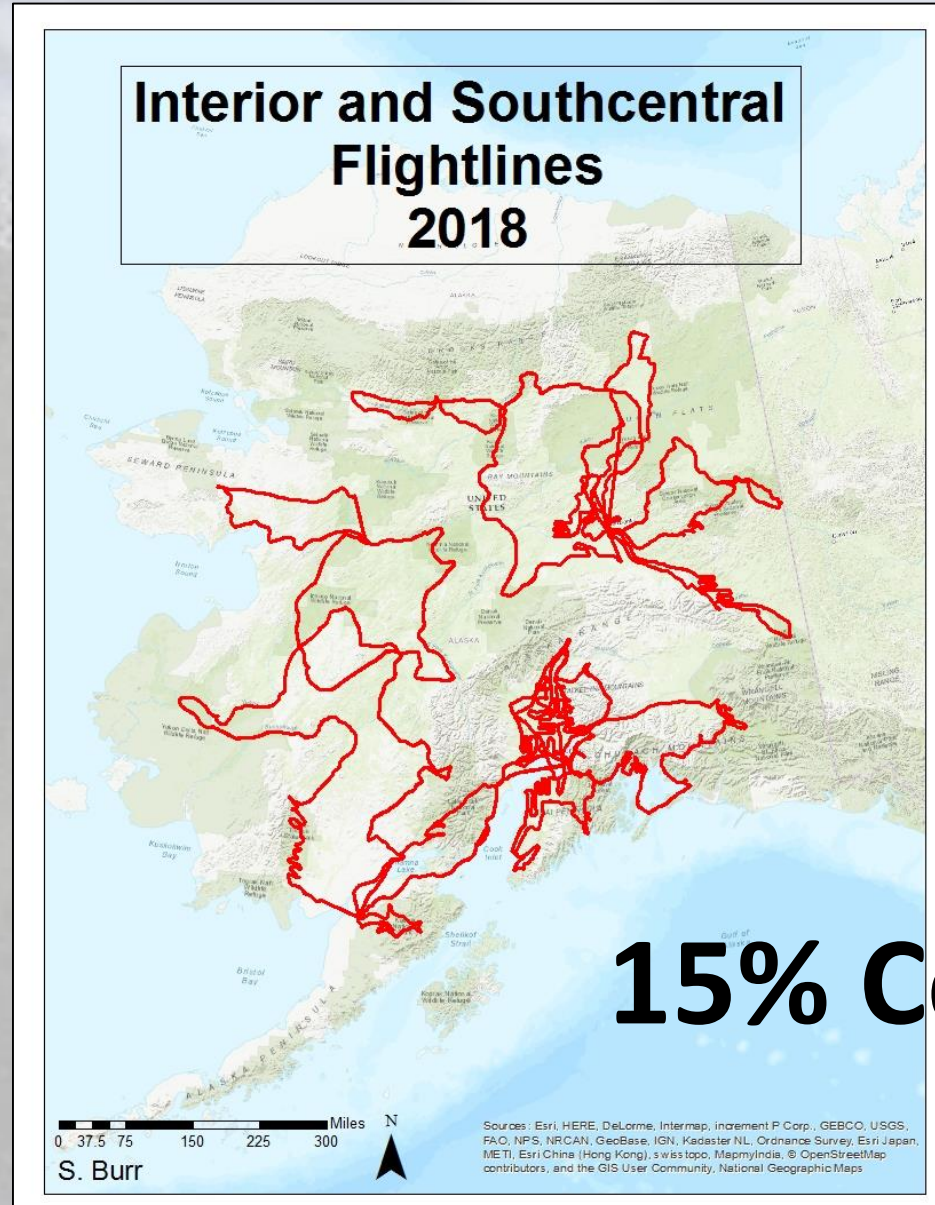


## Major Road Systems





# Alaska Region FHP



**15% Coverage**



# Alaska Region FHP

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## Monitoring

- Aerial survey
- Trapping
- Target Surveys
- Campground & Road surveys



# Alaska Region FHP

## Trapping

- EDRR (3 traps/site)

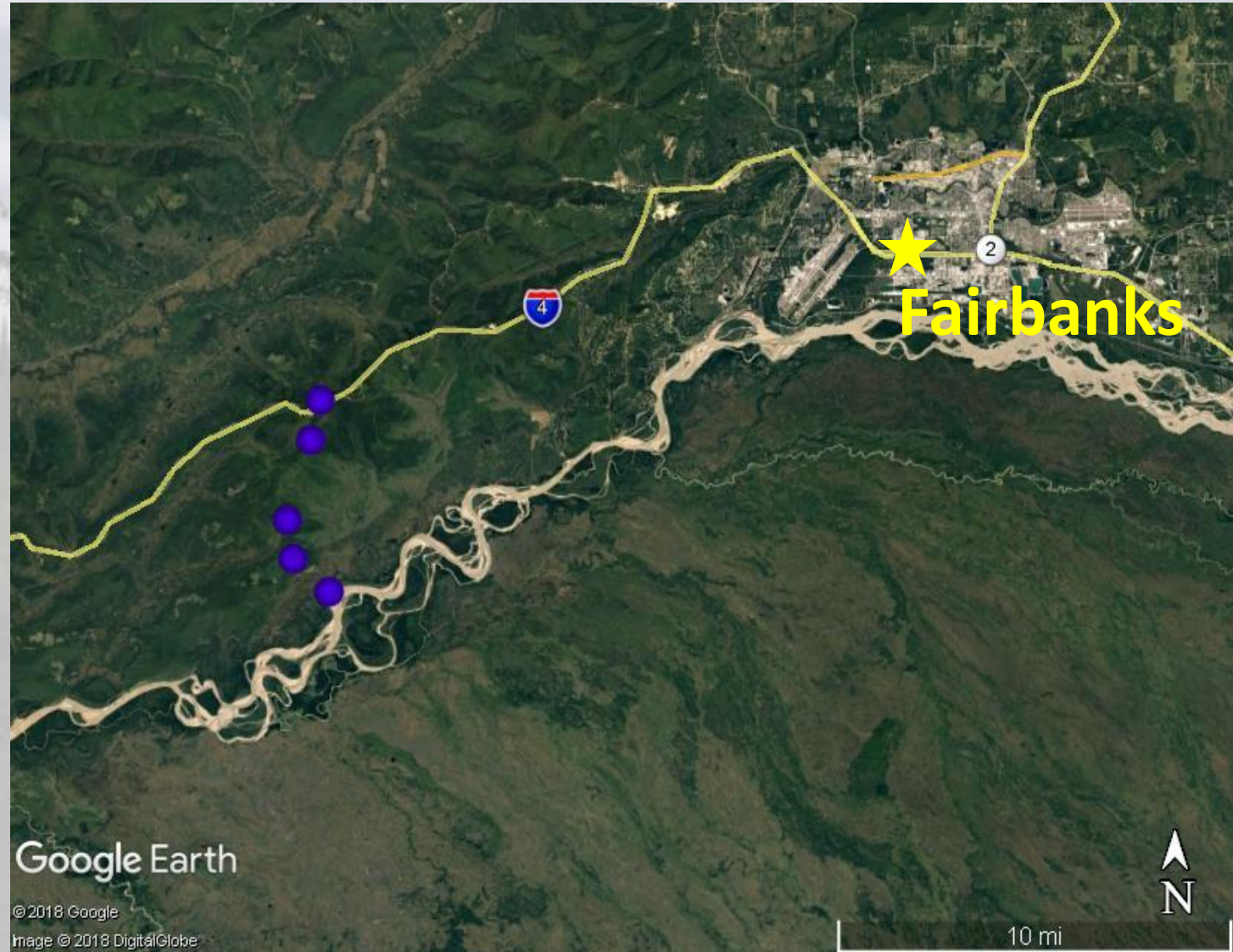




# Alaska Region FHP

## Trapping

- EDRR (3 traps/site)
- LTER (5 traps/site)

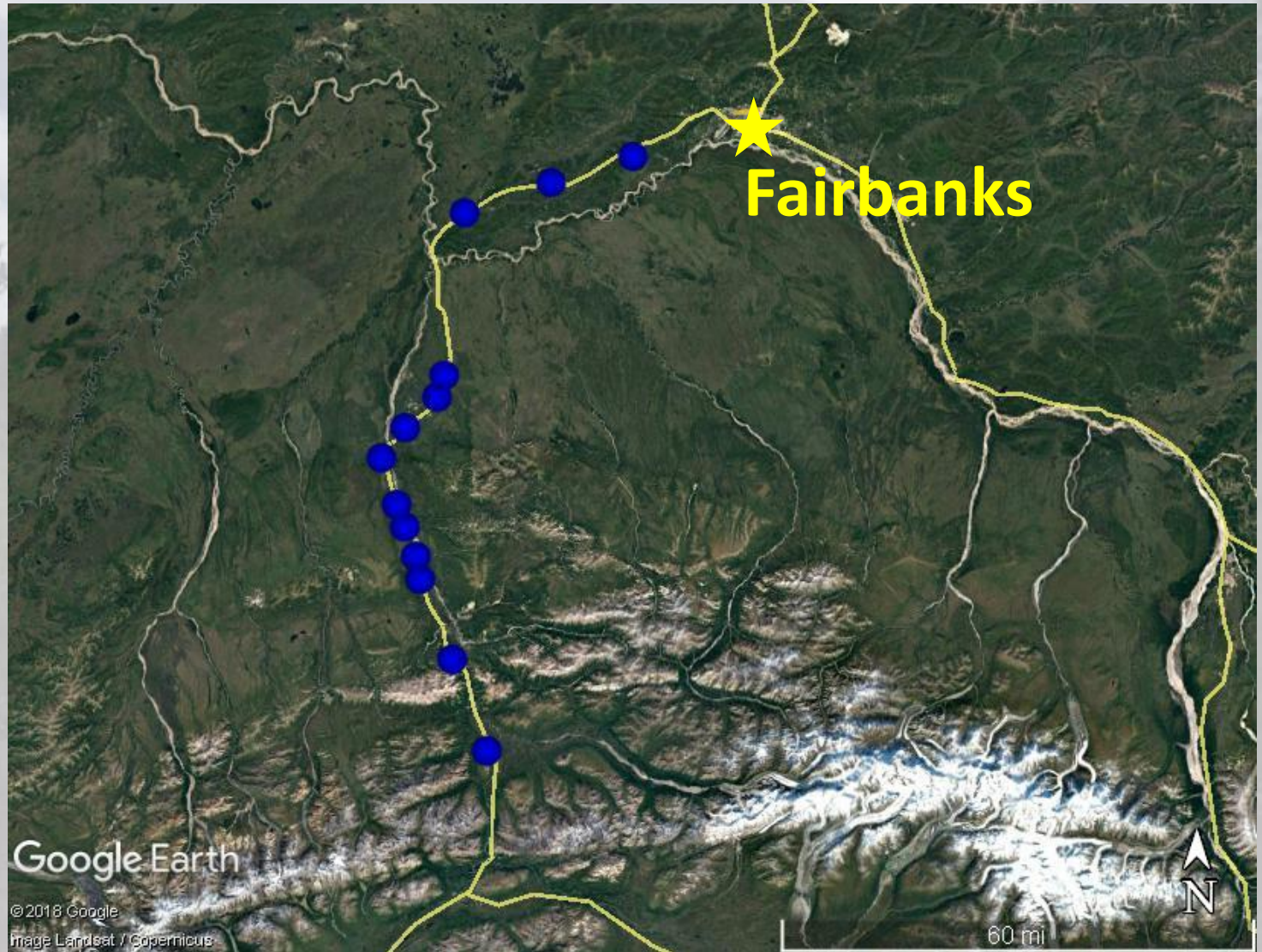




# Alaska Region FHP

## Trapping

- EDRR (3 traps/site)
- LTER (5 traps/site)
- Spruce Beetle (1 trap/site)

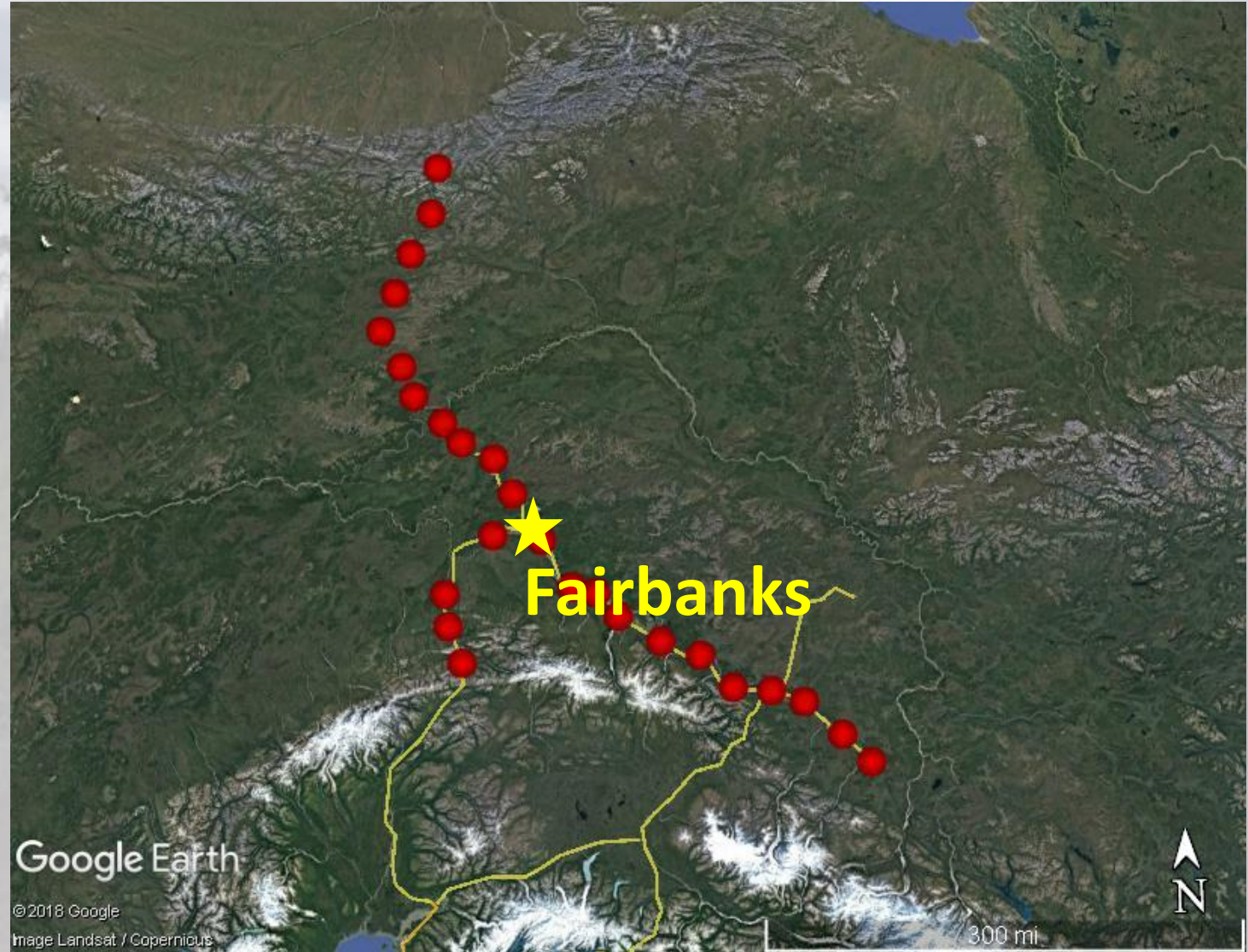




# Alaska Region FHP

## Trapping

- EDRR (3 traps/site)
- LTER (5 traps/site)
- Spruce Beetle  
(1 trap/site)
- Spruce Budworm  
(2 traps/site)







2018

- 68,000 insects identified  
-47,000 *Trypodendron*



*Odontosphindus clavicornis* (Coleoptera: Sphindidae)

ID: Dana Brennan

Confirmed: Derek Sikes

Funnel Trap: *Trypodendron* Lure

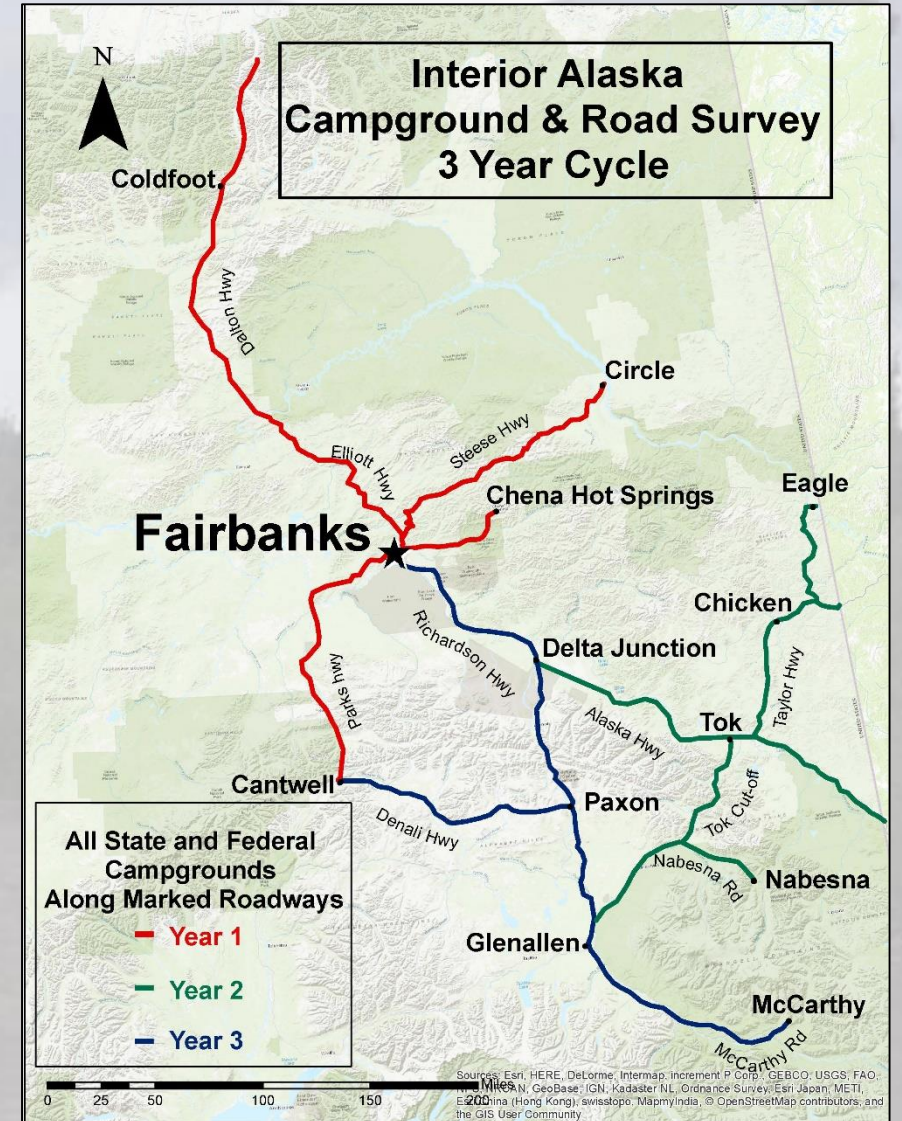
Location: 63.9664, -149.1226

Collection Date: 26 June, 2018






# Alaska Region FHP

## Campground & Road Surveys





# Alaska Region FHP

 R10 FHP Ground Surveys 2018  

☒ Exploratory observation

☐ Campground (20 minutes total time)

☐ Timed meander (20 minutes total time)


☐ Other

GPS

Wait until map border is not red and you see coordinates +/- 10 m at least

64.838°N 147.814°W ± 65 m

Coordinates are not within the accuracy threshold of 10 m




▼ Agent and host

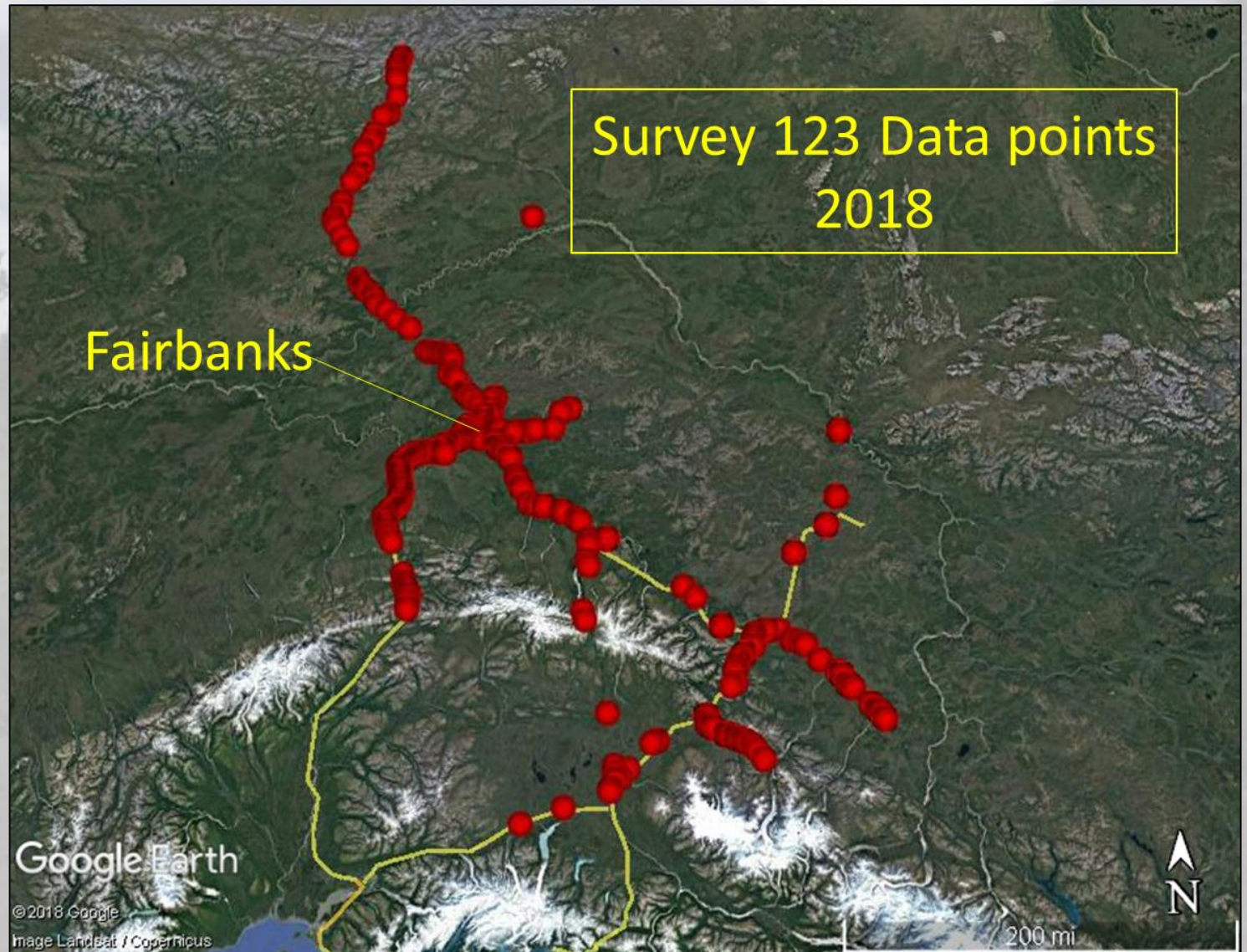
Damage agent category

"None" is only relevant for timed-meander and campground surveys

☐ Disease ☐ Insect

☐ Noninfectious ☐ None

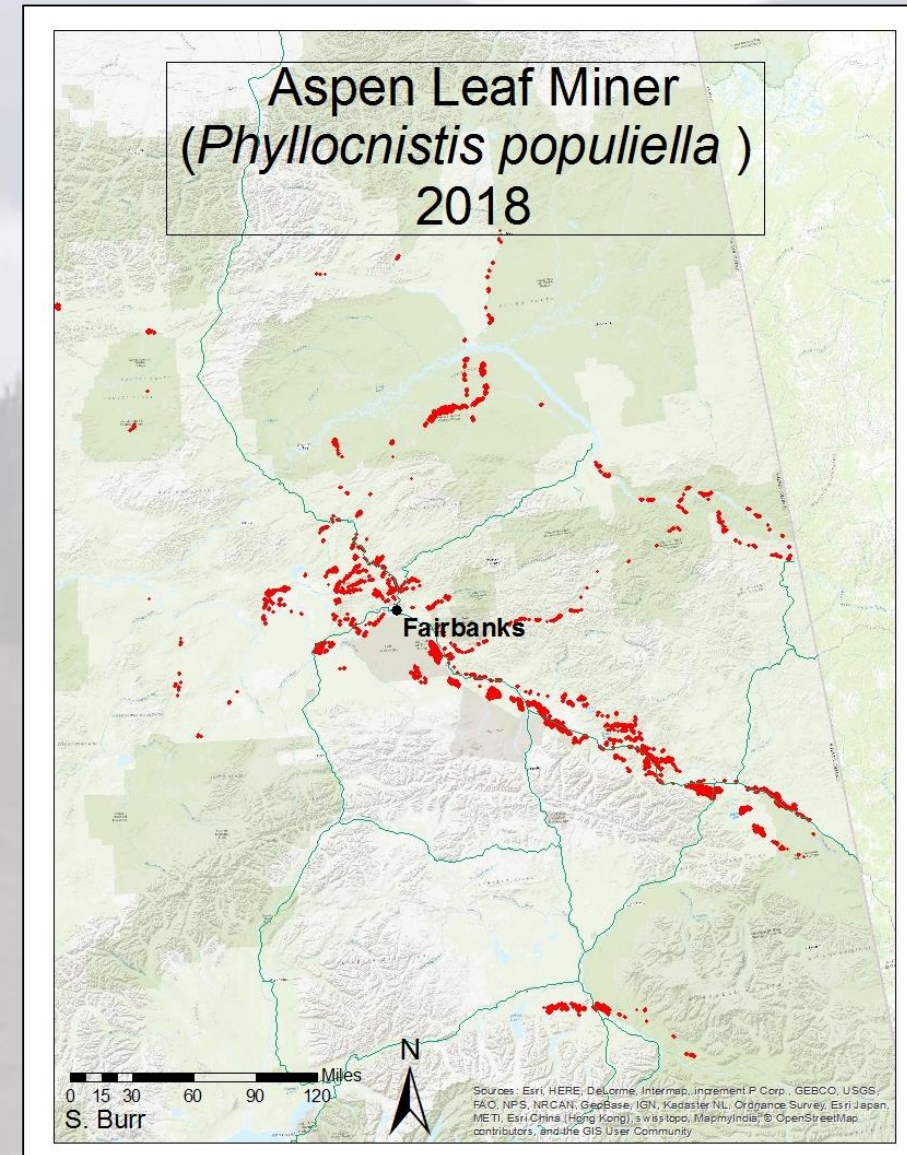
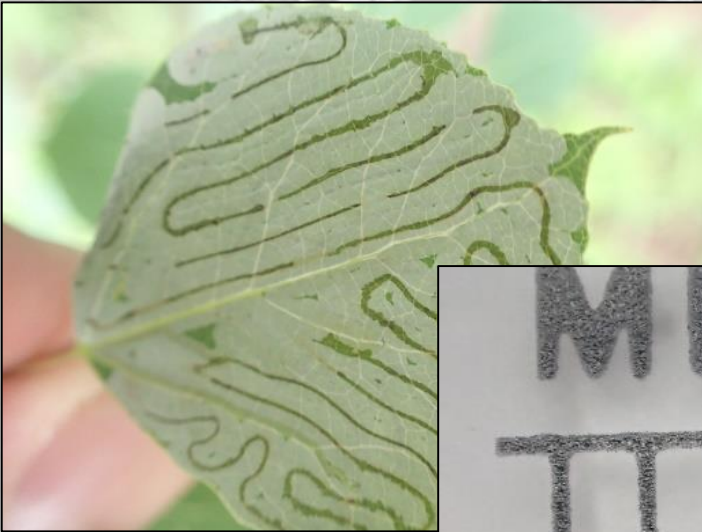






# Alaska FHP (Aspen Leaf Miner)

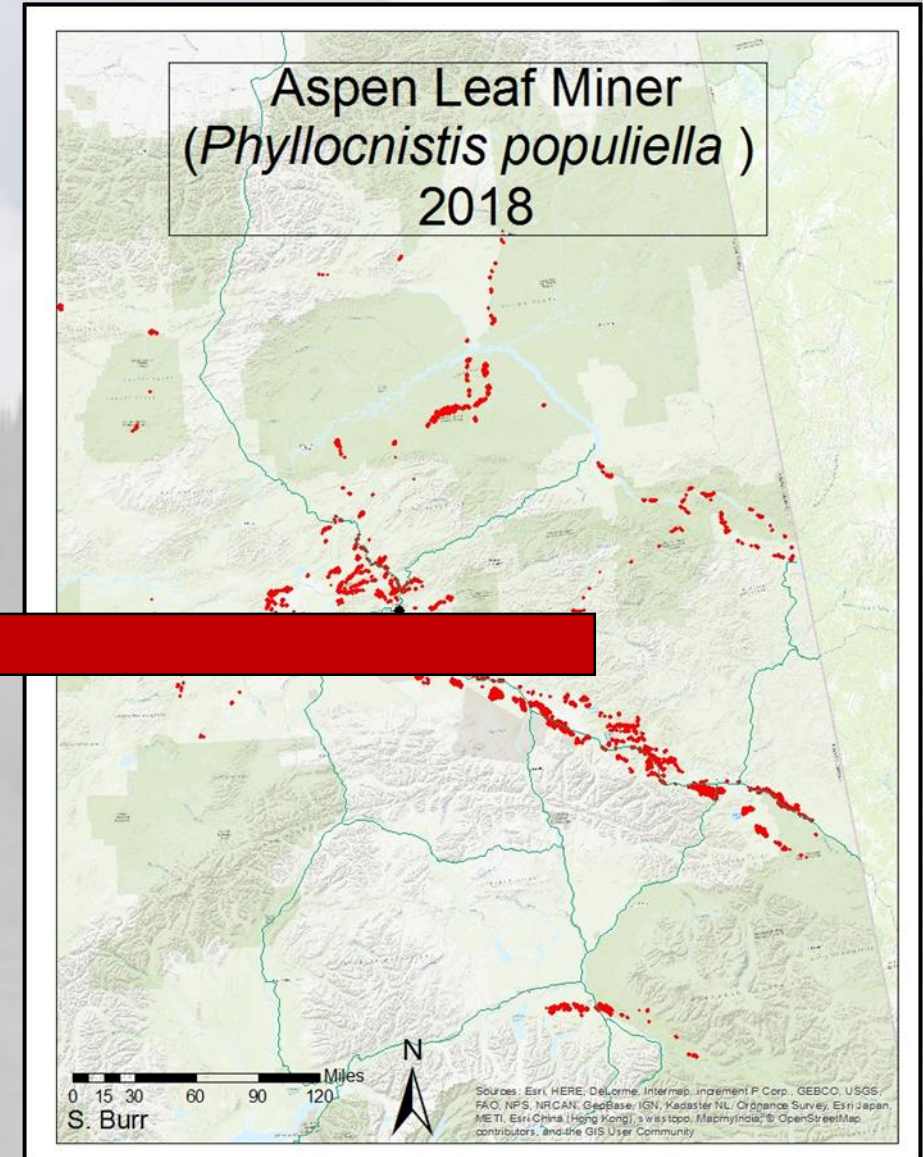
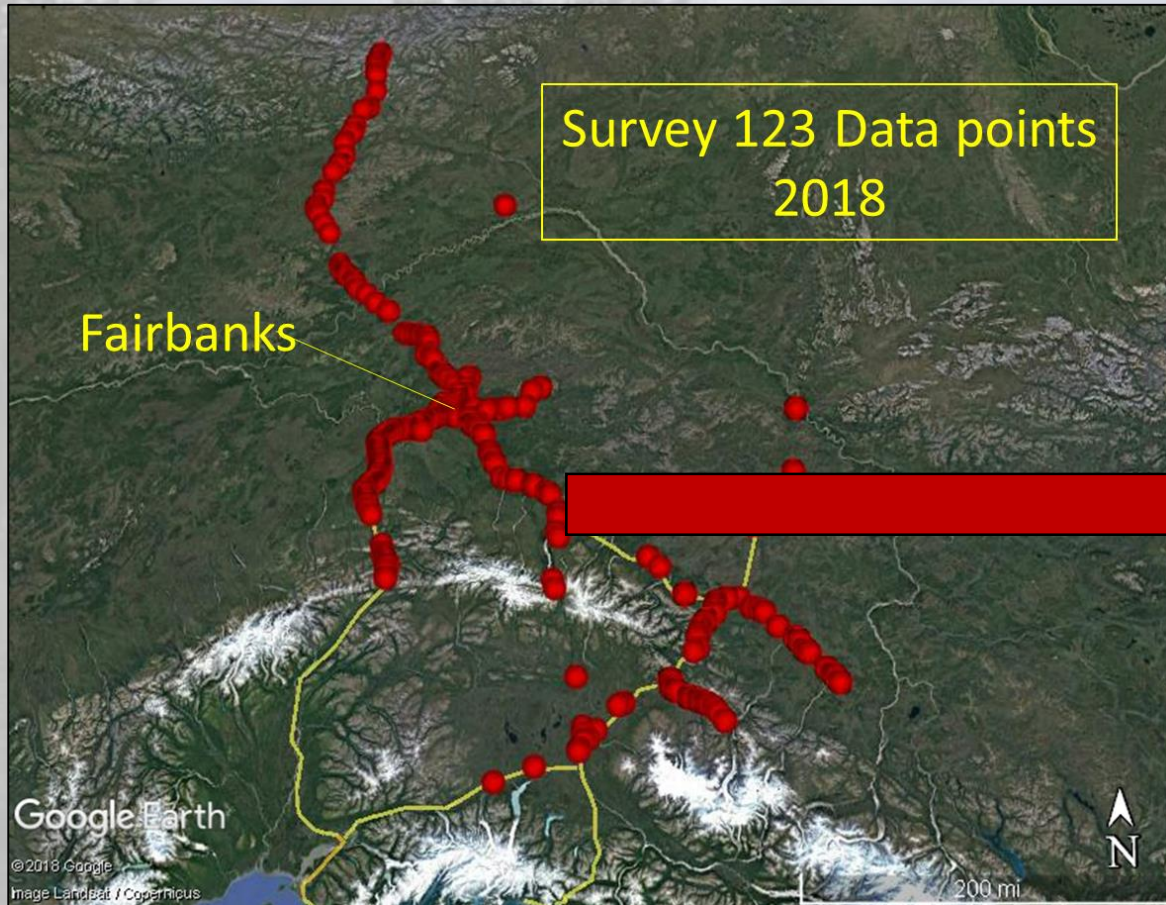
- 230,000 acres in 2018
- Outbreak began in 2002





# Alaska Region FHP (Aspen Leaf Miner)

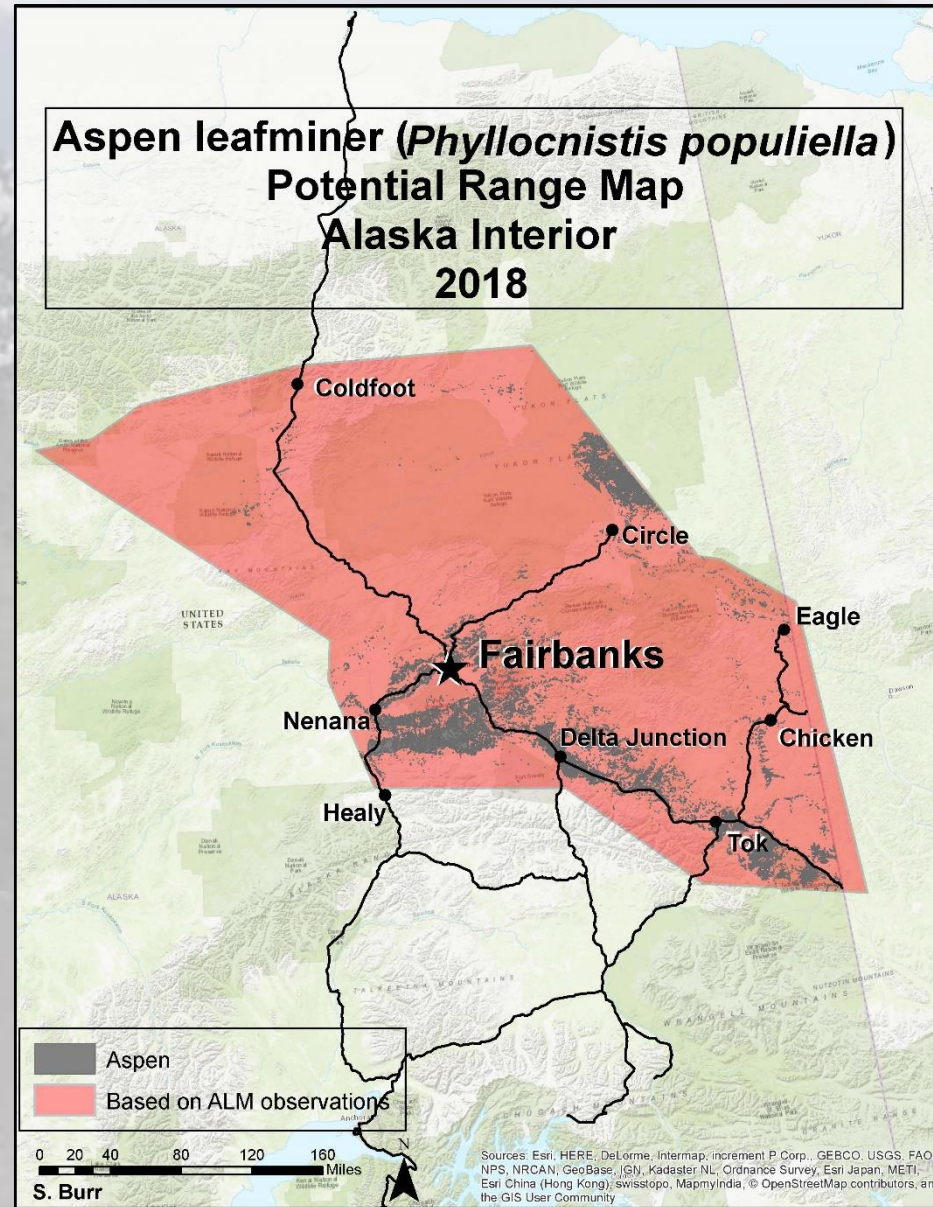
1.2 million acres





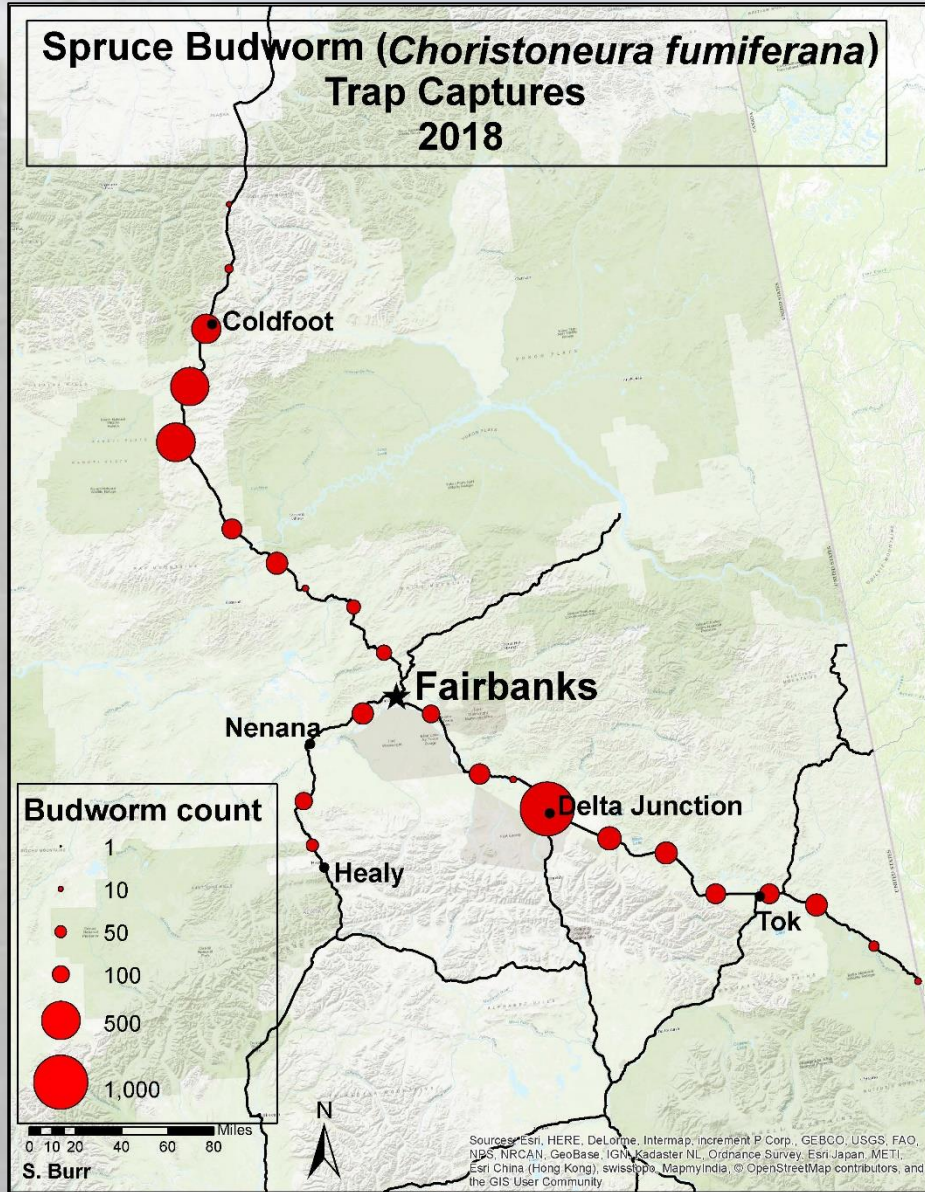
# Alaska Region FHP (Aspen Leaf Miner)

1.2 million acres





# Alaska Region FHP (Spruce Budworm)



## Target Surveys

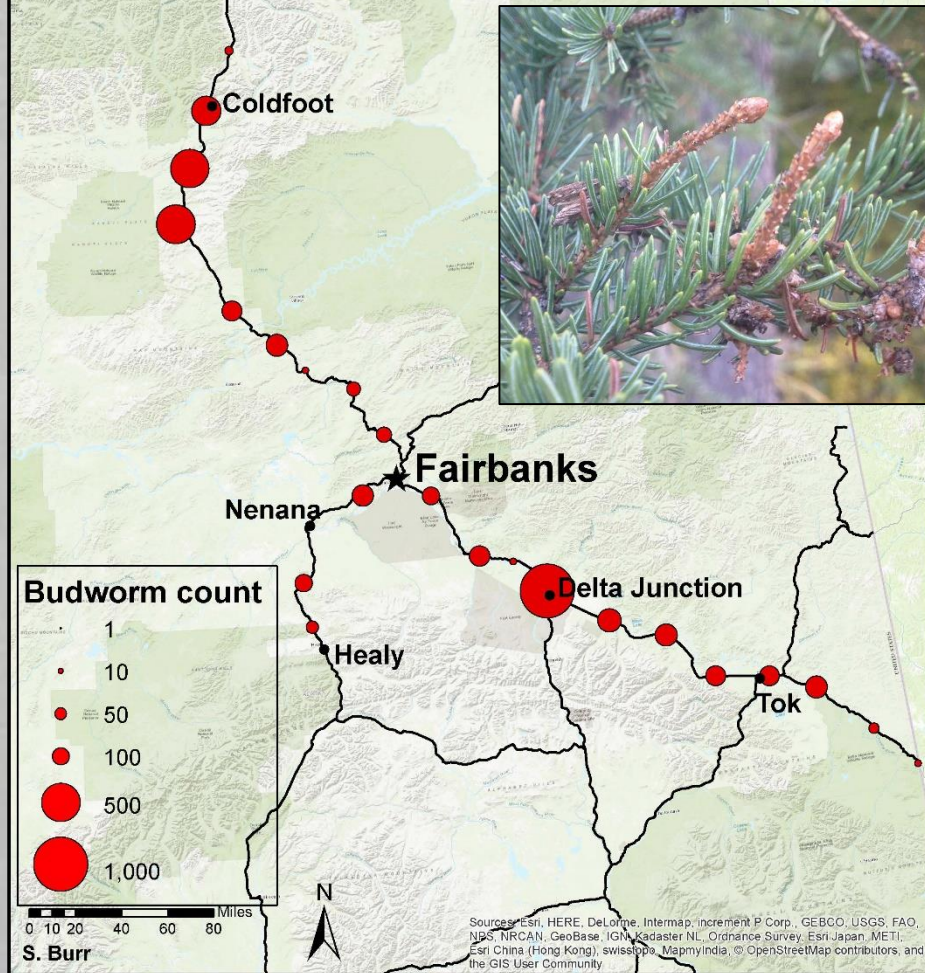
## Budworm trapping



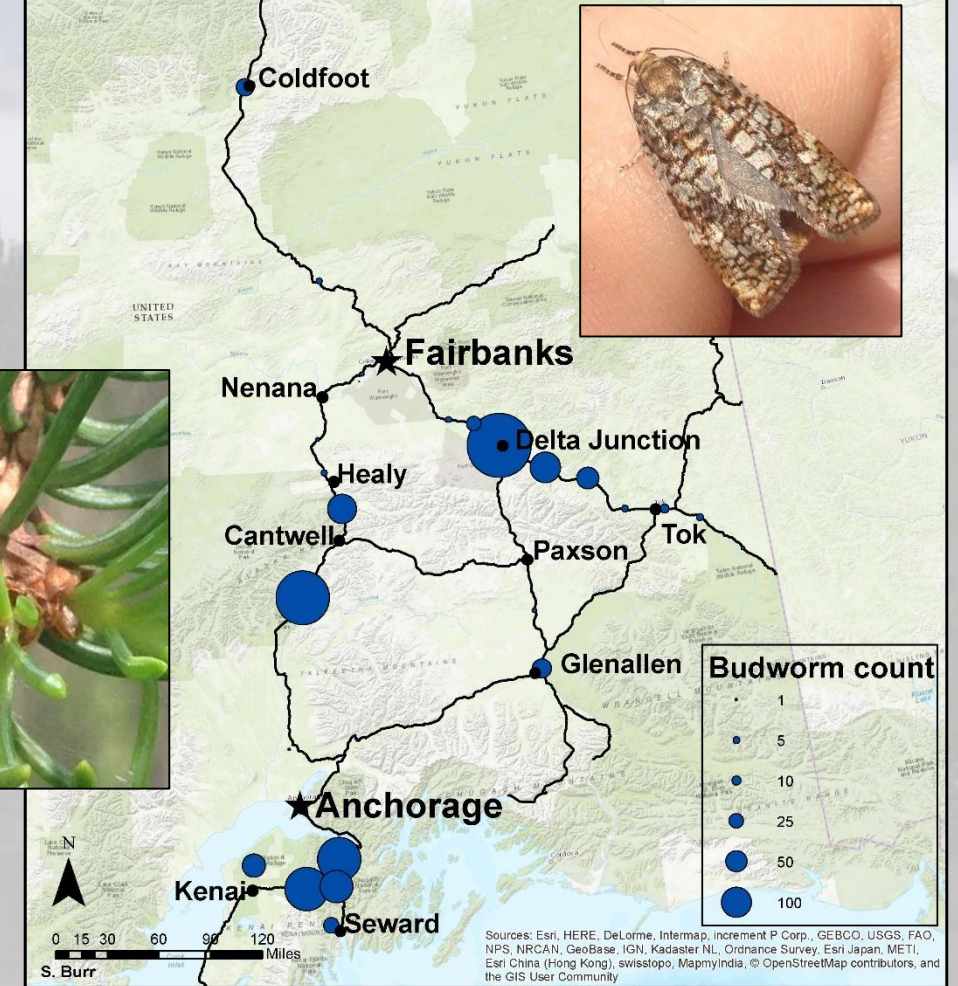


# Alaska Region FHP (Spruce Budworm)

**Spruce Budworm (*Choristoneura fumiferana*)  
Trap Captures  
2018**

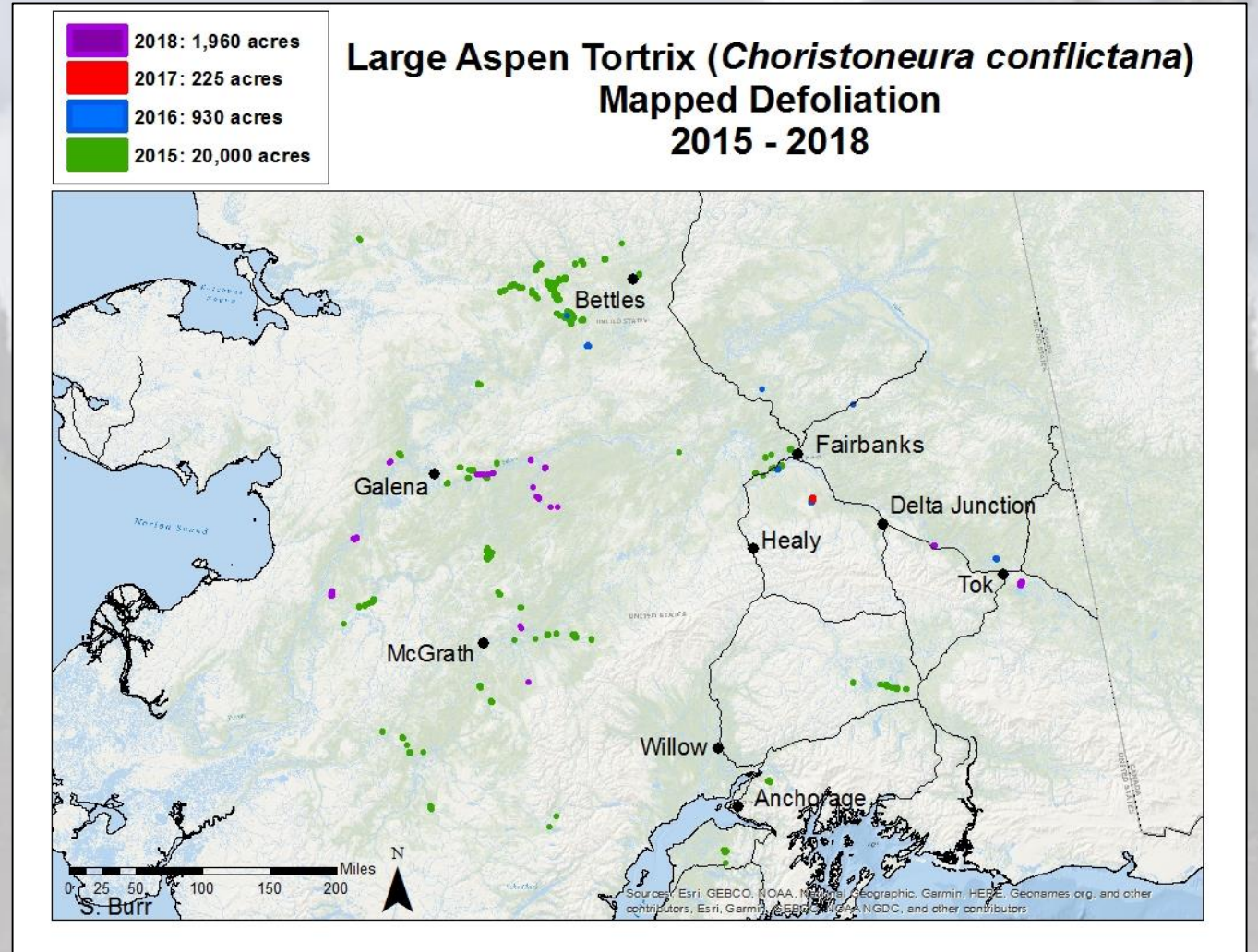
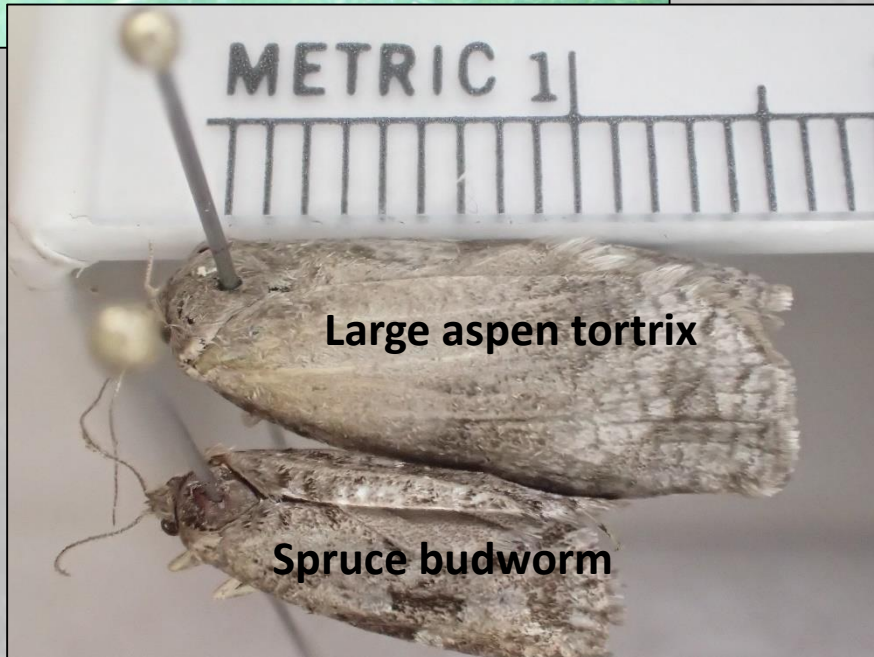


**Spruce Budworm (*Choristoneura orae*)  
Trap Captures  
2018**





# Alaska FHP (Large Aspen Tortrix)





# Alaska FHP (Large Aspen Tortrix)

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1,960 acres



Large Aspen Tortrix

18,000 acres aspen defoliation



Aspen Running Canker

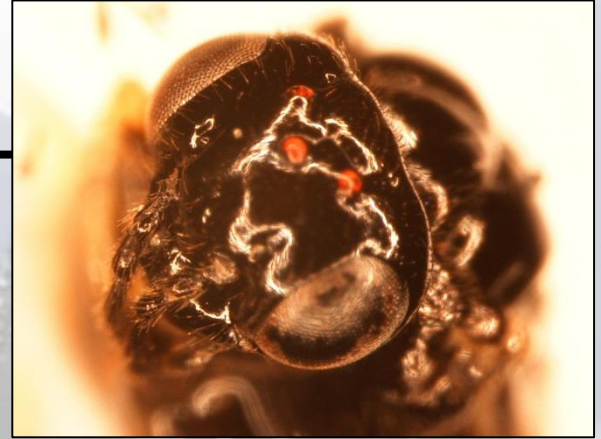


# Alaska Region FHP (Birch Leaf Miners)

Sawflies (Hymenoptera:Tenthredinidae)

3 species in Alaska

- **Amber-marked birch leafminer (*Profenusa thomsoni*)**
- **Late birch leaf edgeminer (*Heterarthrus nemoratus*)**
- Birch leafminer (*Fenusa pumila*)

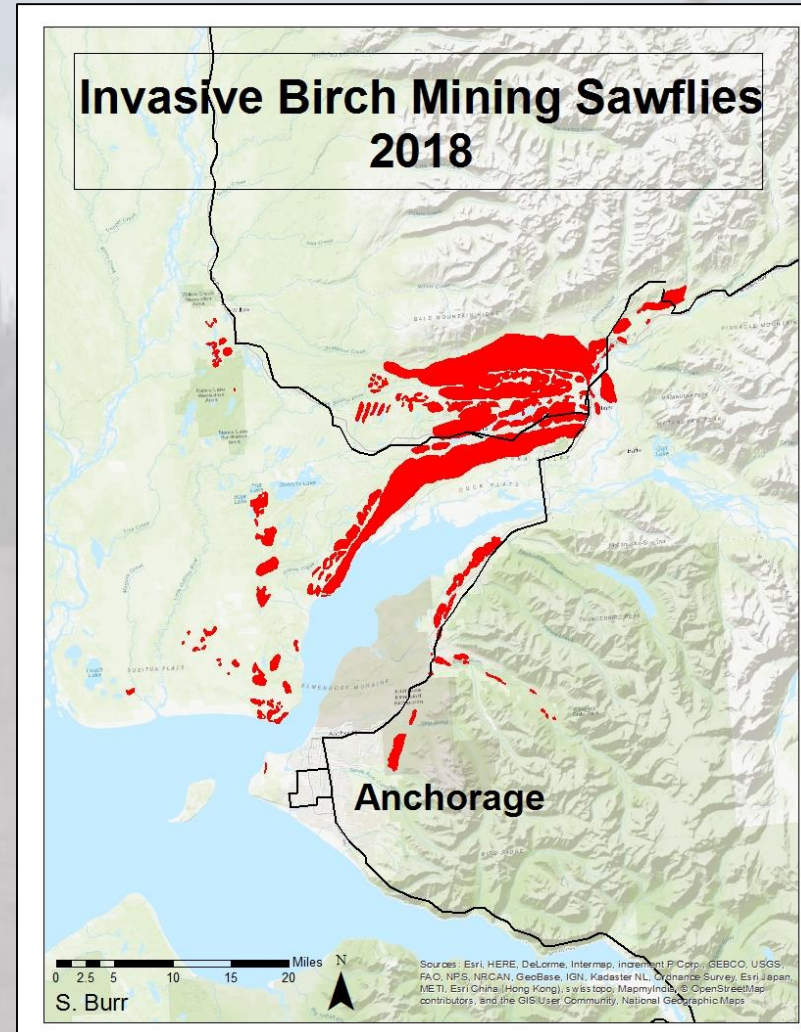


Digweed et al. 2009



# Alaska FHP (Birch Mining Sawflies)

100,000 acres in 2018





# Alaska FHP (Birch Mining Sawflies)

Ovipositing females prefer sun leaves

South Facing

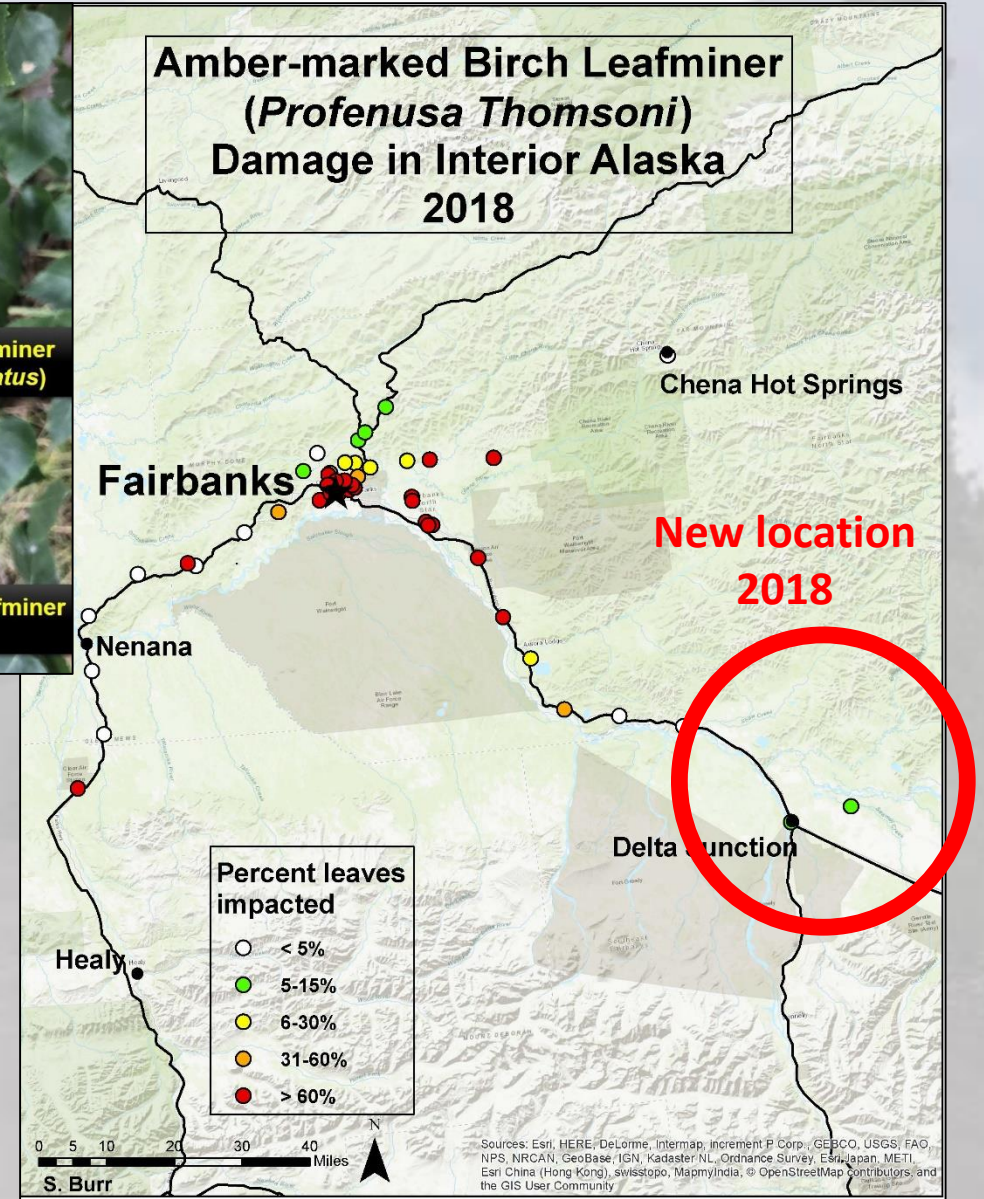
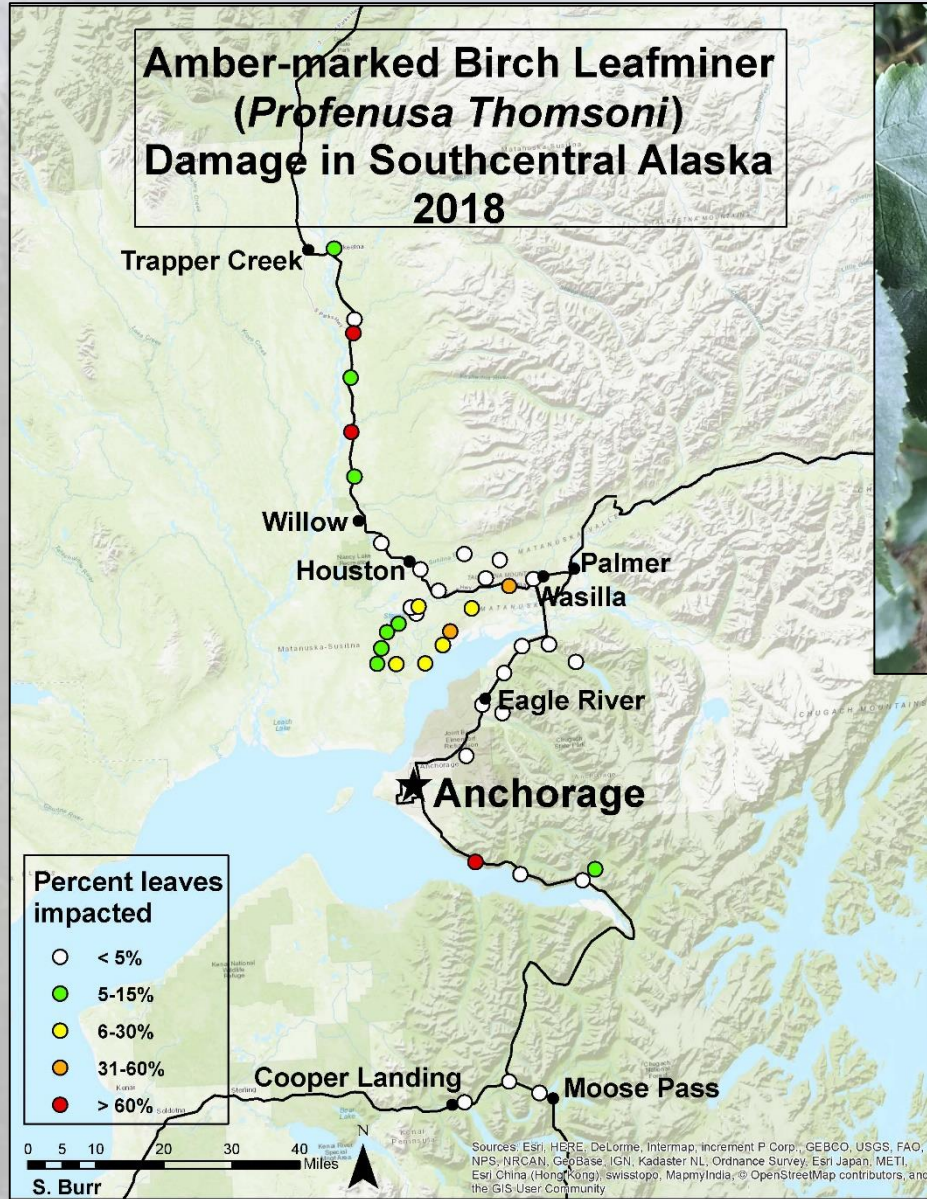


North Facing



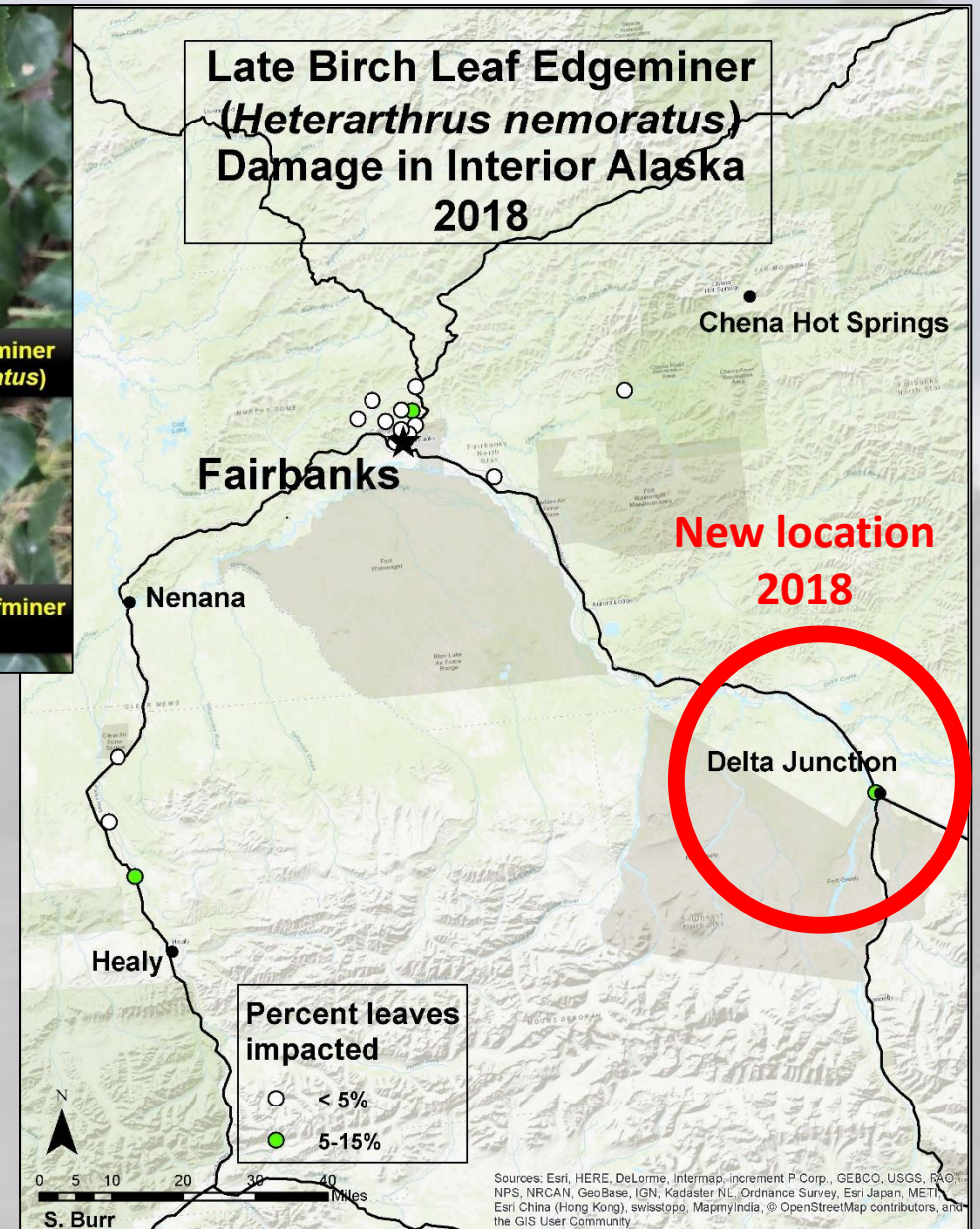
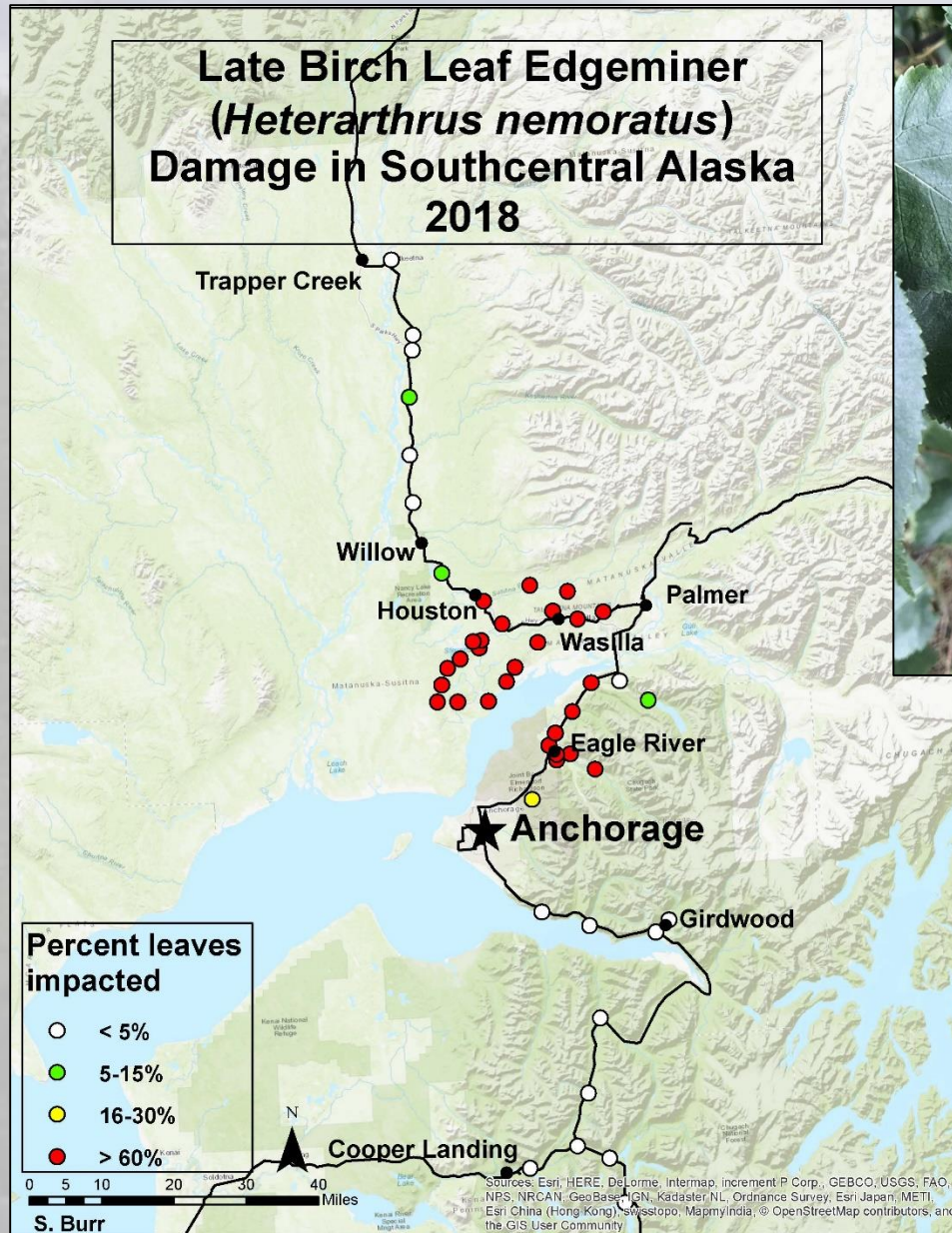


# Alaska Region FHP (Birch Leaf Miners)



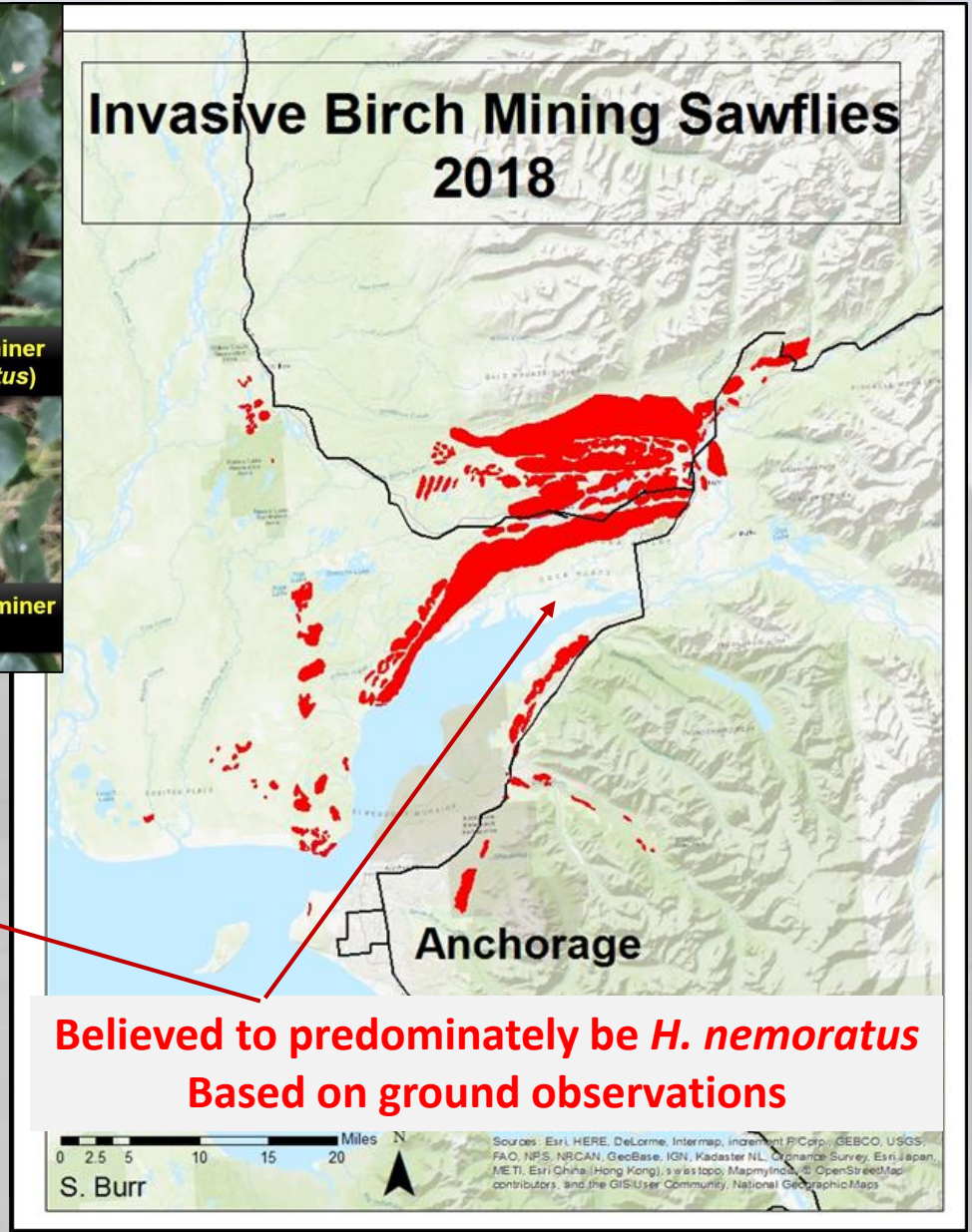
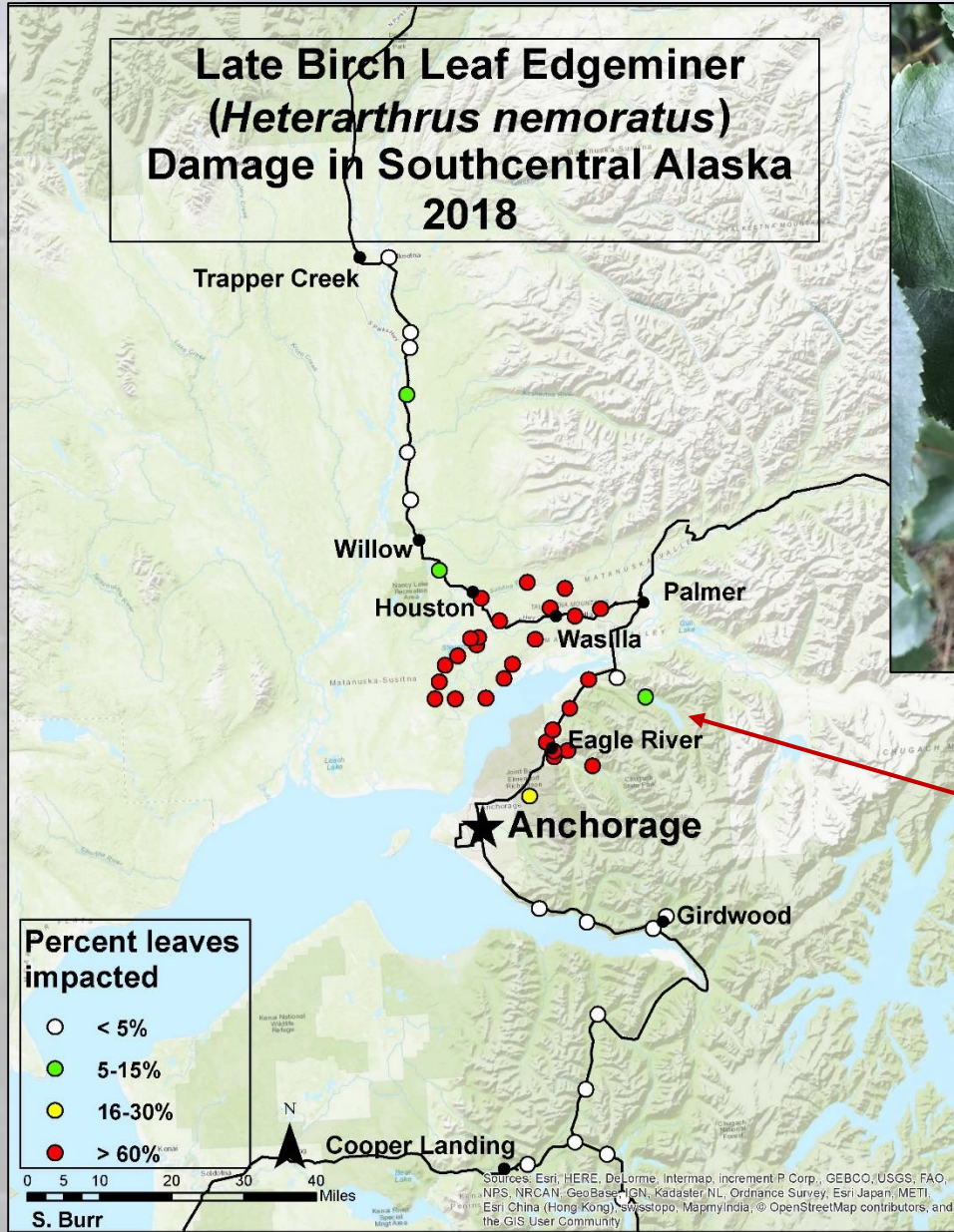


# Alaska Region FHP (Birch Leaf Miners)





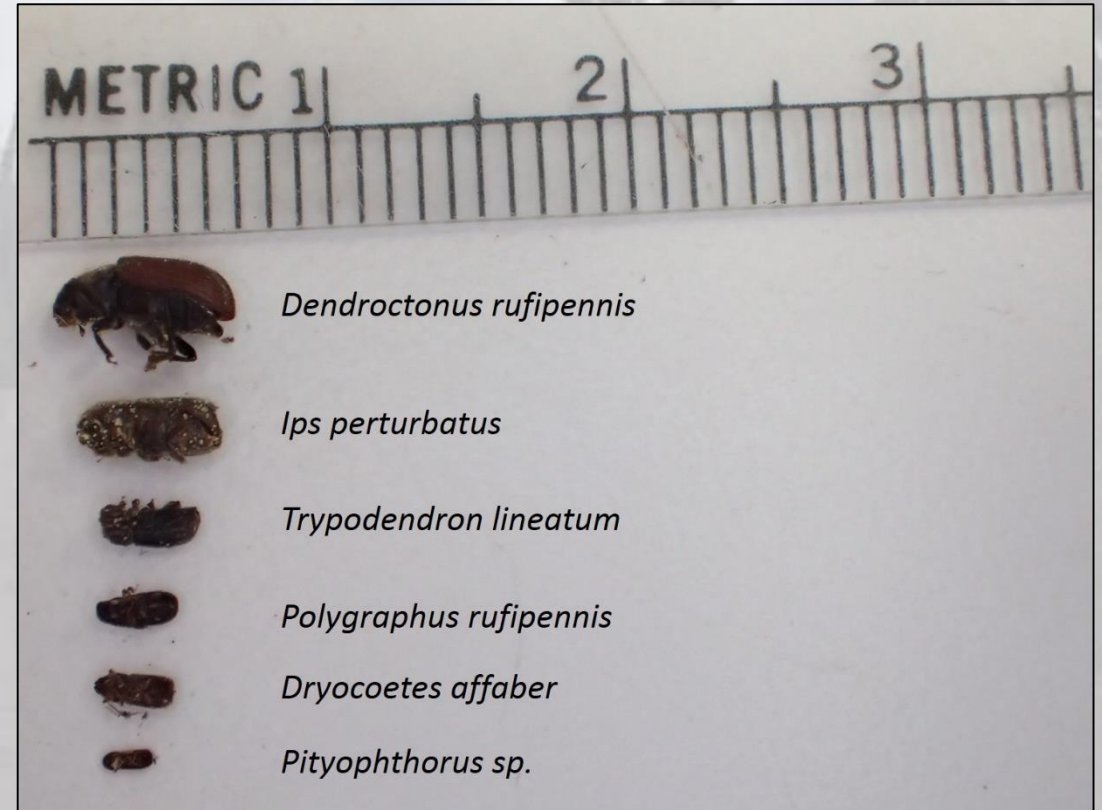
# Alaska Region FHP (Birch Leaf Miners)





# Alaska FHP (Spruce Beetle)

- 590,000 acres in 2018
- 910,000 acres in the last 3 years





# Interior spruce beetle

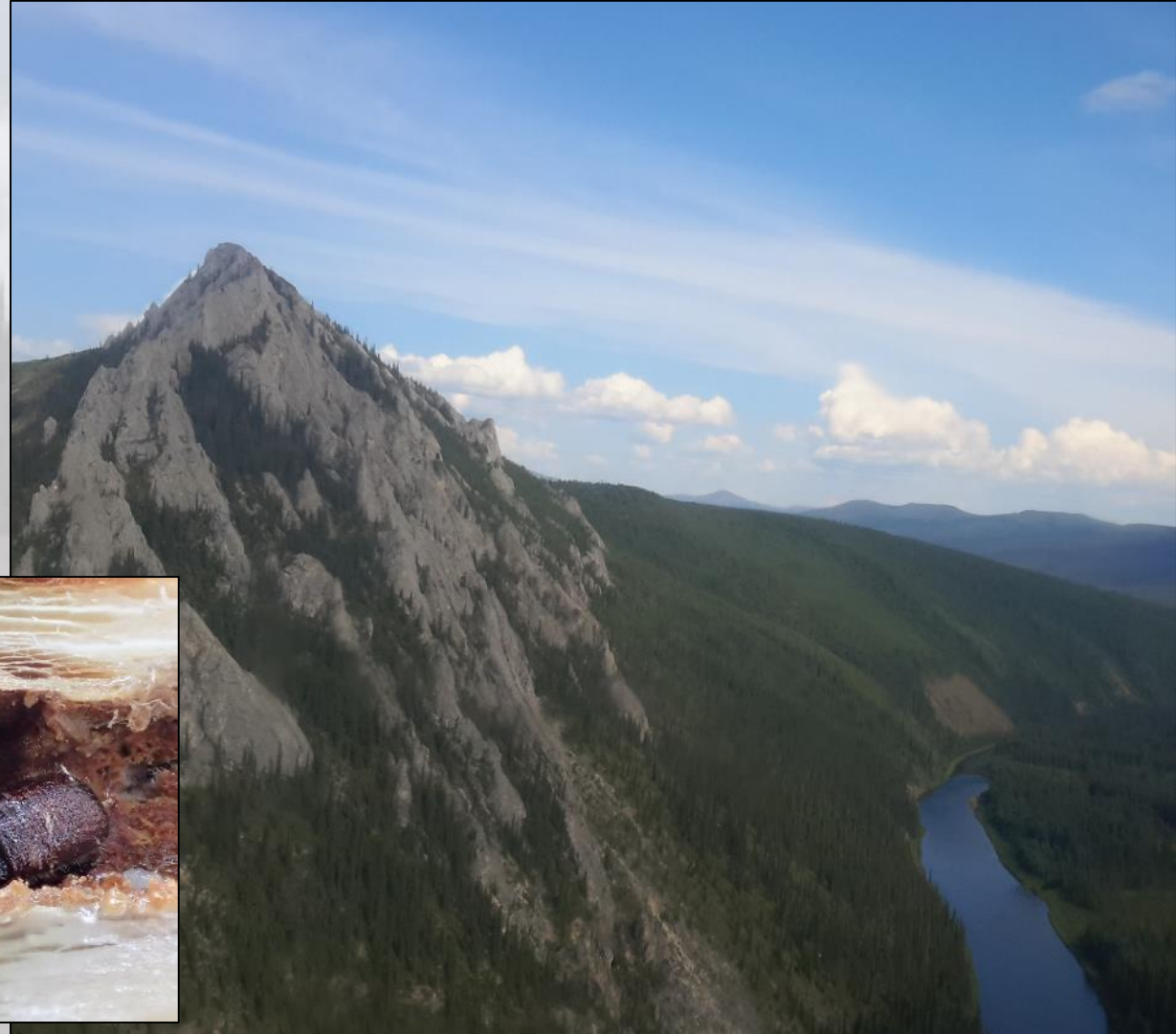
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Interior Alaska

- 660 K acres in 40 years

Southcentral Alaska

- 900 K in last 3 years





# Interior spruce beetle

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Too Cold



**Theories why spruce beetles  
behave differently the Interior  
compared to Southcentral**



Too Dry



# Interior spruce beetle

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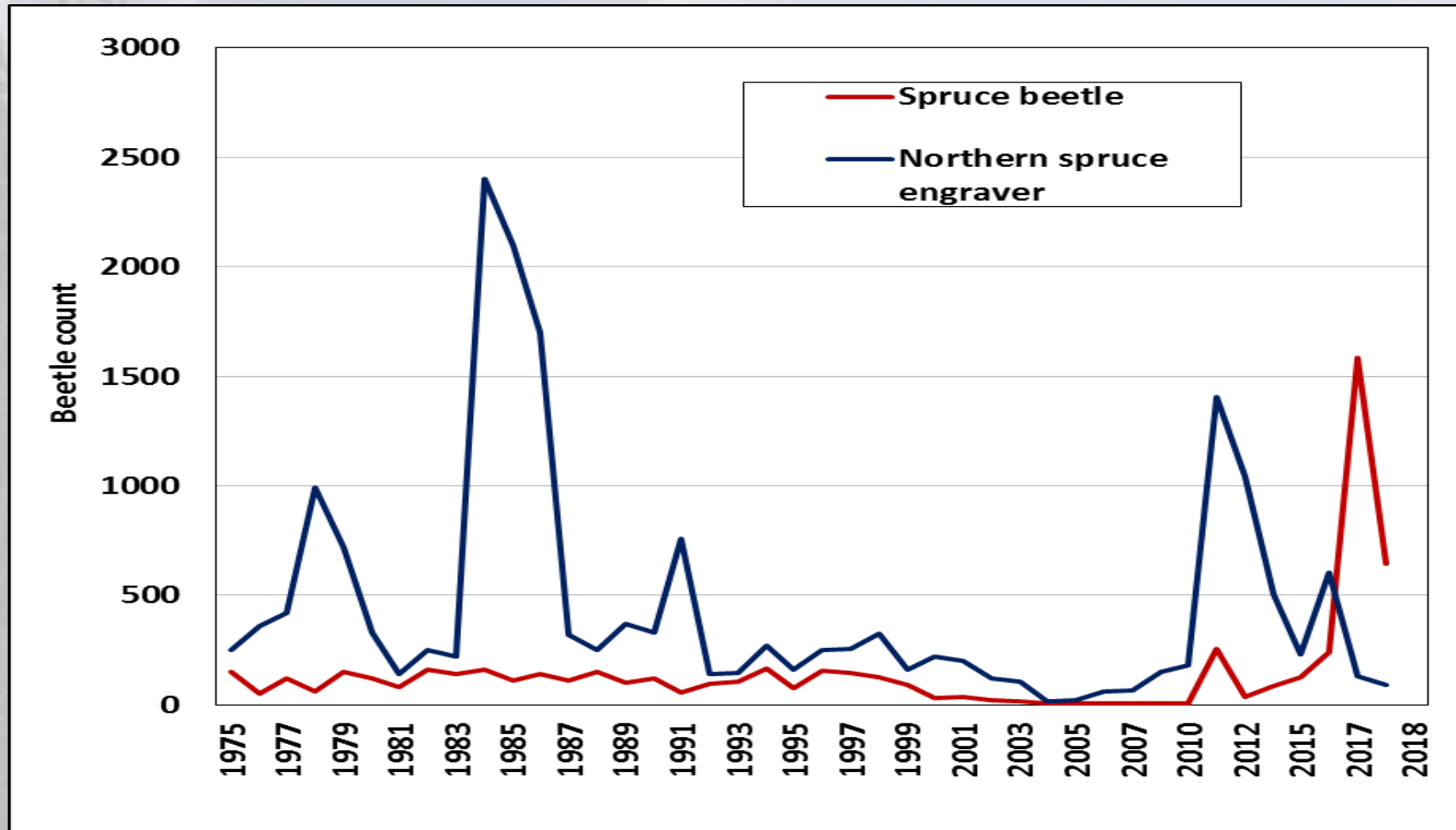
## Too Dry

- Interior: High latitudinal desert
- Trees are adapted to dry conditions
- Dry conditions do not necessarily indicated drought stress
- Drought (beyond normal conditions) = beetle outbreak?
- Increase precipitation = beetle outbreak?





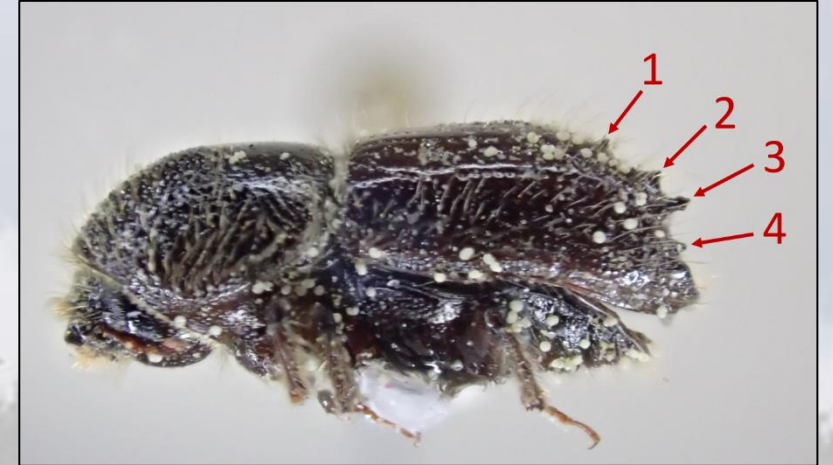
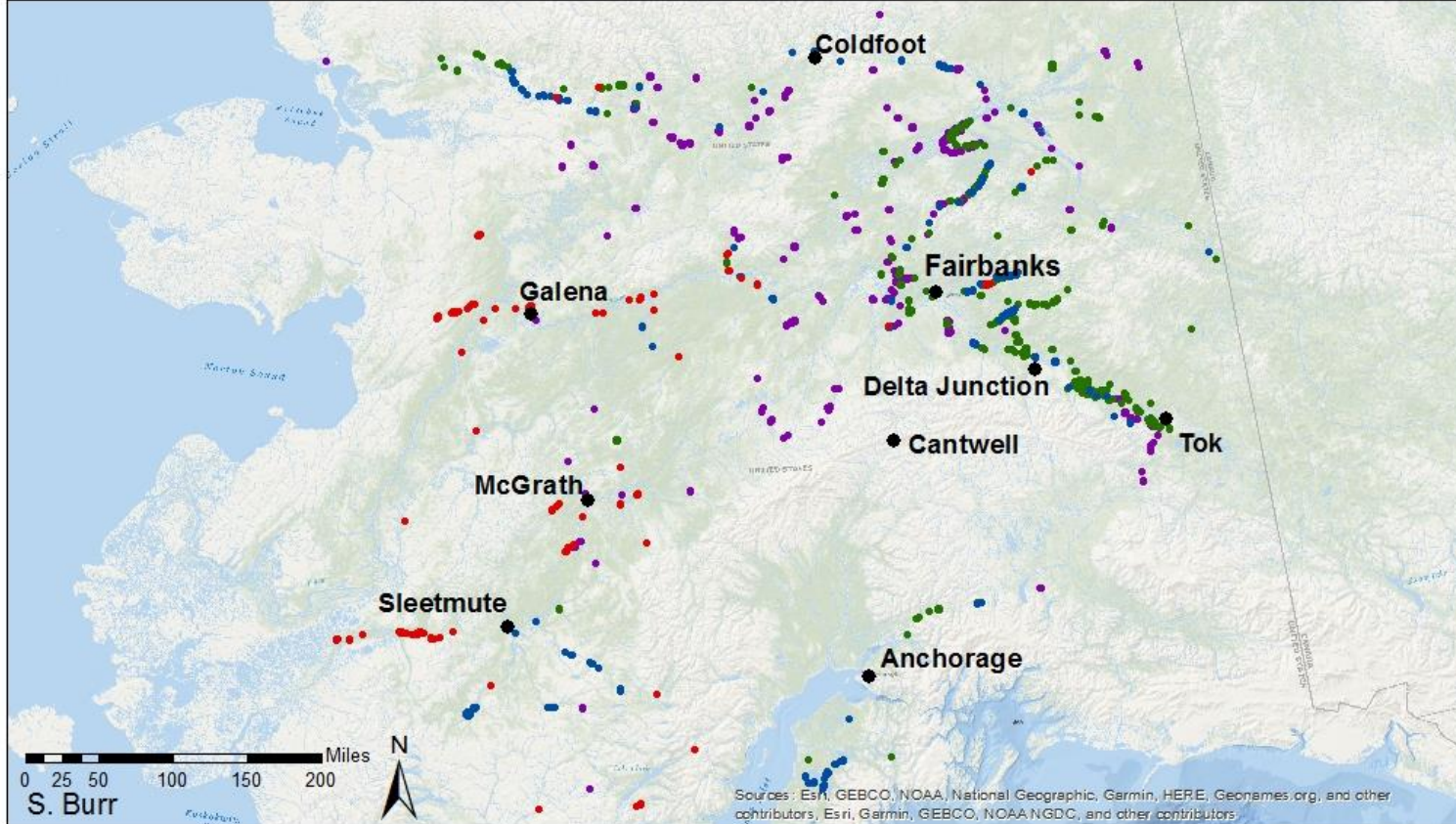
# Alaska FHP (Interior Bark Beetles)





# Alaska FHP (Northern Spruce Engraver)

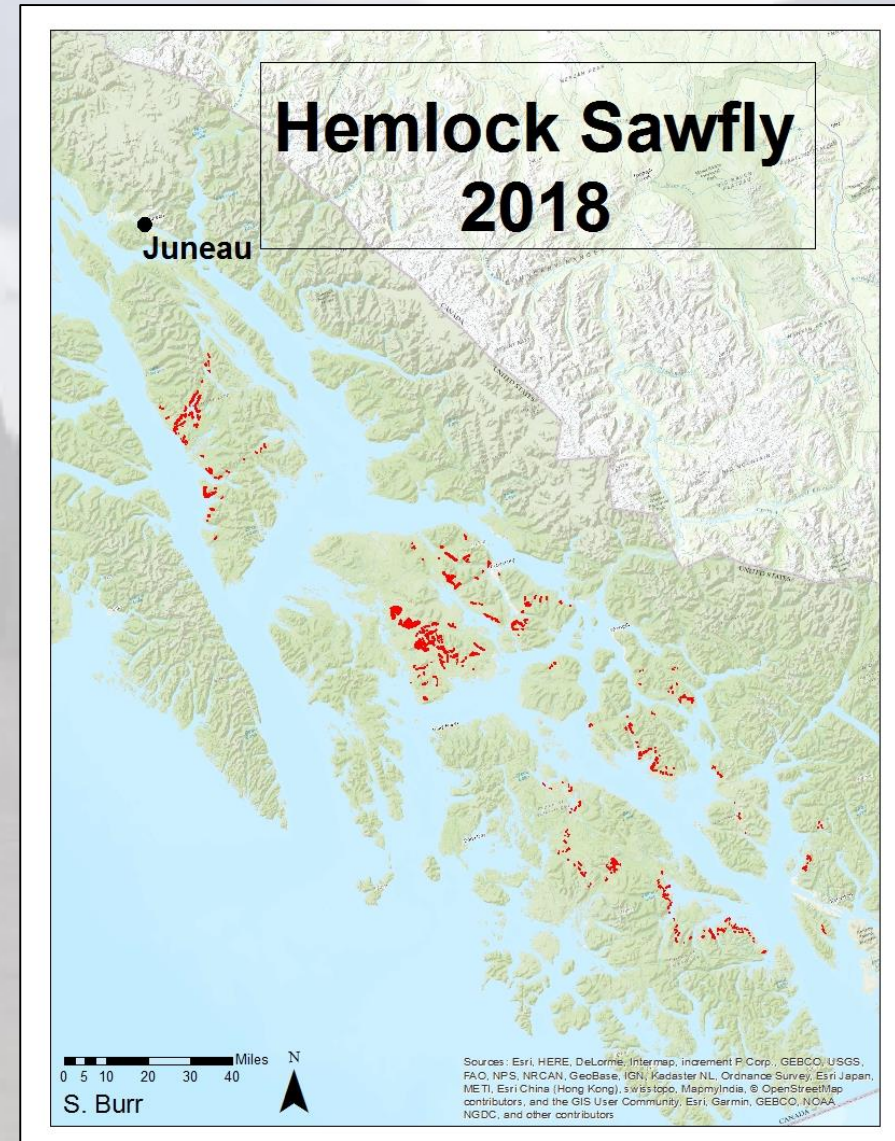
## Northern Spruce Engraver (*Ips perturbatus*) Mapped Damage 2015-2018





# Alaska FHP (*Neodiprion tsugae*)

37,000 acres in 2018



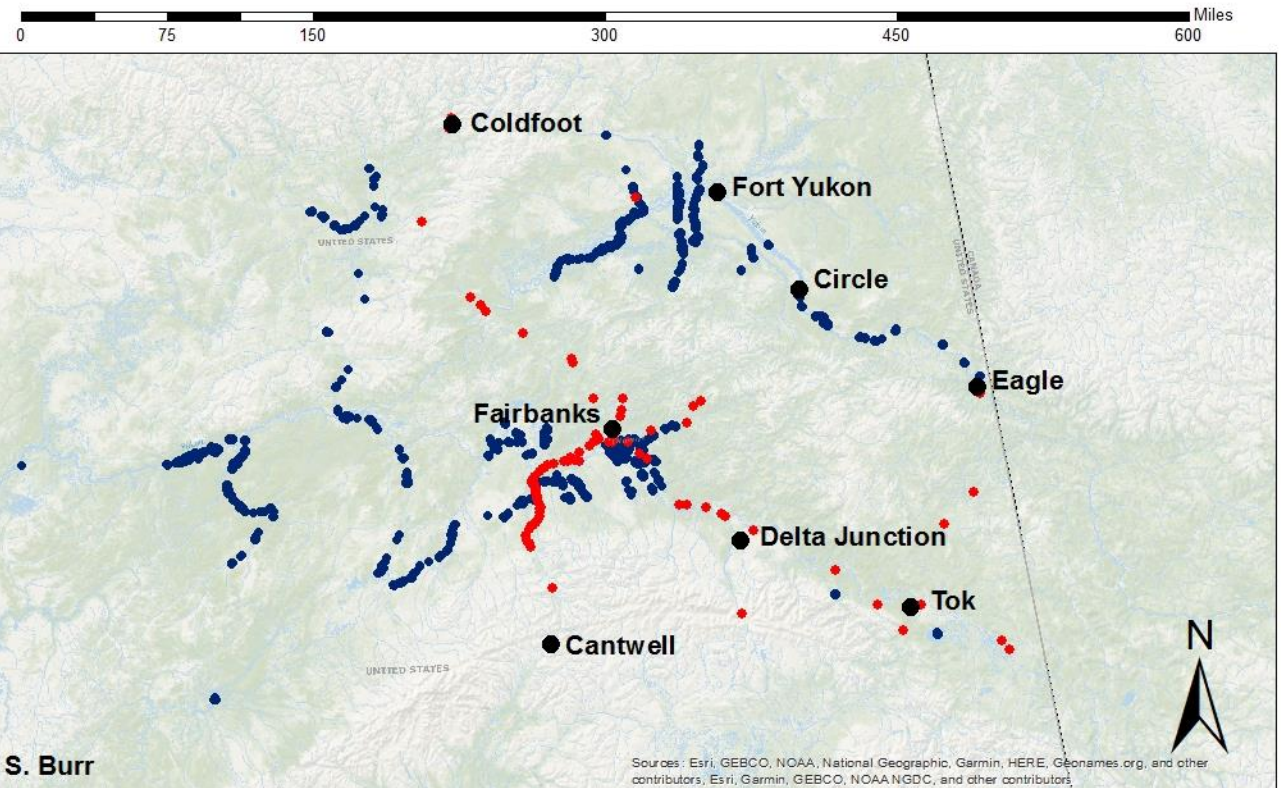


# Alaska FHP (Willow Leafblotch Miner)

36,000 acres in 2018



## Willow Leafblotch Miner (*Micrurapteryx salicifoliella*) 2018





# Alaska FHP (Willow Leafblotch Miner)

36,000 acres in 2018





# Alaska FHP (Willow Leafblotch Miner)

36,000 acres in 2018

Allman et al. *BMC Ecol* (2018) 18:38  
<https://doi.org/10.1186/s12898-018-0192-x>

BMC Ecology

## RESEARCH ARTICLE

Open Access



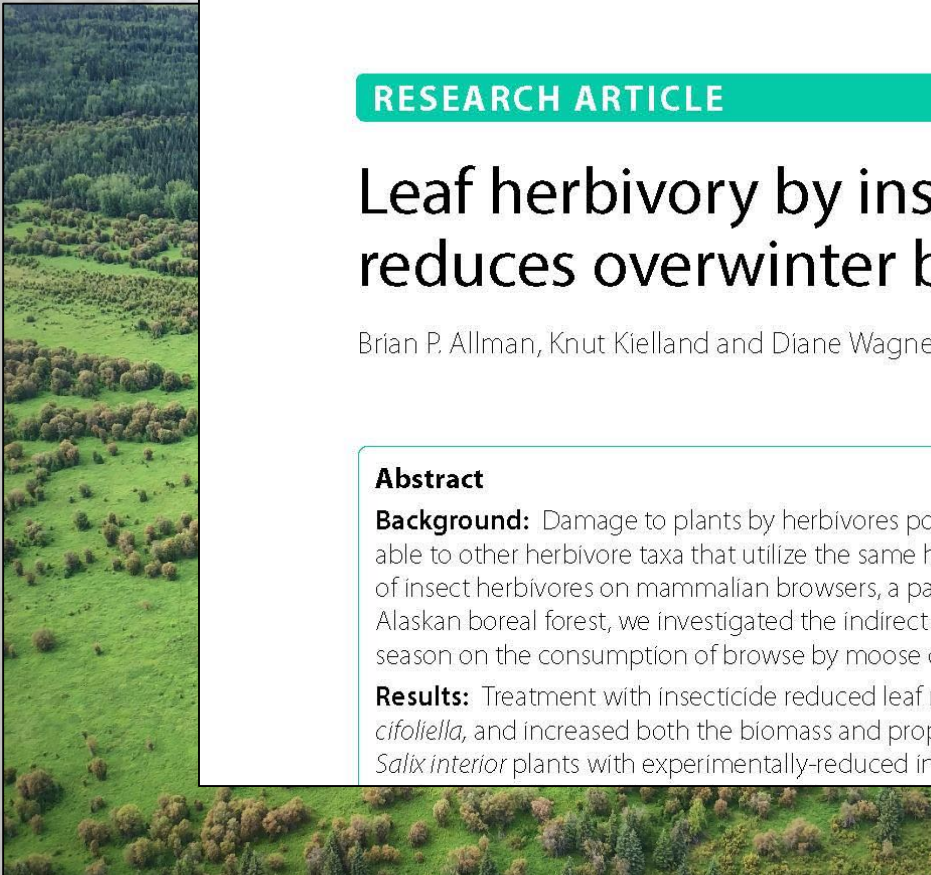
## Leaf herbivory by insects during summer reduces overwinter browsing by moose

Brian P. Allman, Knut Kielland and Diane Wagner\* 

### Abstract

**Background:** Damage to plants by herbivores potentially affects the quality and quantity of the plant tissue available to other herbivore taxa that utilize the same host plants at a later time. This study addresses the indirect effects of insect herbivores on mammalian browsers, a particularly poorly-understood class of interactions. Working in the Alaskan boreal forest, we investigated the indirect effects of insect damage to *Salix interior* leaves during the growing season on the consumption of browse by moose during winter, and on quantity and quality of browse production.

**Results:** Treatment with insecticide reduced leaf mining damage by the willow leaf blotch miner, *Micrurapteryx salicifoliella*, and increased both the biomass and proportion of the total production of woody tissue browsed by moose. *Salix interior* plants with experimentally-reduced insect damage produced significantly more stem biomass than



Allman et al. 2018



# Alaska FHP

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Birch leaf roller  
*Caloptilia* spp.

Frequency: Consistent  
Intensity: Down



# Alaska FHP

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Speckled green fruit worm (*Orthosia hibisci*)  
Battered sawfly moth (*Synura verberata*)



Damage for both low in 2018



# Alaska FHP

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Spruce Aphid  
*Elatobium abietinum*

Recorded 126 acres



# Alaska FHP (Currently in outbreak in Alaska)





A scenic landscape featuring a dirt road in the foreground, flanked by dense evergreen trees and shrubs. In the background, majestic mountains are partially shrouded in mist or low clouds. The overall atmosphere is serene and natural.

# Thank You