Attachment 4

lnitial Study Report Meeting Transcript

March 29, 2016

Susitna-Watana Hydroelectric Project
(FERC No. 14241)

Initial Study Report Meetings
March 29, 2016
Transcripts

Alaska Energy Authority – Board Room
813 West Northern Lights Blvd.
Anchorage, AK 99503

SUSITNA-WATANA HYDRO

Clean, reliable energy for the next 100 years.

SUSITNA-WATANA HYDRO

Agenda and Schedule

Initial Study Report (ISR) Meetings

Waterbird Migration, Breeding, and Habitat Use (Study 10.15)

Surveys of Eagles and Other Raptors (Study 10.14)

Landbird and Shorebird Migration, Breeding, and Habitate Use (Study 10.16)

Moose Distribution, Abundance, Movements, Productivity and Survival (Study 10.5)

Caribou Distribution, Abundance, Movements, Productivity, and Survival (Study 10.6)

(See page 2, studies continued)

(AEA) Alaska Energy Authority

813 W Northern Lights Blvd

Anchorage, AK 99503

March 29, 2016

Reported by: Accu-Type Depositions, Inc.; Sunny Morrison CSR #7575 and Sydney Hamilton CSR #3166

STUDIES CONTINUED

Dall's Sheep Distribution and Abundance (Study 10.7)

Wolverine Distribution, Abundance, and Habitat Occupancy (Study 10.9)

Population Ecology of Willow Ptarmigan in Game Management Unit 13 (Study 10.17)

Terrestrial Furbearer Abundance and Habitat Use (Study 10.10)

Bat Distribution and Habitat Use (Study 10.13)

Aquatic Furbearer Abundance and Habitat Use (Study 10.11)

Wood Frog Occupancy and Habitat Use (Study 10.18)

Distribution, Abundance, and Habitat Use by Large Carnivores (Study 10.8)

Small Mammal Species Composition and Habitat Use (Study 10.12)

Wildlife Harvest Analysis (Study 10.20)

Evaluation of Wildlife Habitat Use (Study 10.19)

Vegetation and Wildlife Habitat Mapping Study in the Upper and Middle Susitna Basin (Study 11.5)

Wetland Mapping Study in the Upper and Middle Susitna Basin (Study 11.7)

Rare Plant Study (11.8)

Invasive Plant Study (Study 11.9)

ATTENDEES

Julie Anderson, Denali Management Solutions
Mark Burch, Alaska Department of Fish and Game
Earl Becker, Alaska Department of Fish and Game
Kevin Colson, Alaska Department of Fish and Game
Brian Cooper (phone), ABR, Inc.
Douglass Cooper, United States Fish & Wildlife Service
Jennifer Curtis (phone), EPA
Wayne Dyok, H2O EcoPower
Kirby Gilbert, MWH Global
Jesse Hankins, Bureau of Land Management
Janet Kidd (phone), ABR, Inc.
Susan Ives, ABR, Inc.
Joe Klein, Alaska Department of Fish and Game
Erin Knoll, United States Fish & Wildlife Service
Jan Konigsburg (phone), Hydropower Reform Coalition
Brian Lawhead, ABR, Inc.
Heide Lingenfelter (phone), Ahtna, Inc.
Becky Long (phone), Susitna River Coalition
Todd Mabee (phone), ABR, Inc.
Rick Merizon, Alaska Department of Fish and Game
Lauren McClure (phone), Stillwater Sciences
Betsy McCracken, U.S. Fish and Wildlife Service
Betsy McGregor, Alaska Energy Authority
Ruth McHenry, Copper Country Alliance

Alan Mitchnick, Federal Energy Regulatory Commission
Tim Obritschkewitsch, ABR, Inc.
Doug Ott, Alaska Energy Authority
Dirk Pedersen (phone), Stillwater Sciences
Kathryn Peltier, McMillen Jacobs Associates
Tyler Rychener, Federal Energy Regulatory Commission
Terry Schick (phone), ABR, Inc.
Charles Sensiba, Van Ness Feldman LLP
Dan Smith, Alaska Energy Authority
Karen Sughrue, Federal Energy Regulatory Commission
Linda Swarman (phone), (Indiscernible affiliation)
Cassie Thomas (phone), National Park Service
Whitney Wolff (phone), Talkeetna Community Council
Mike Wood (phone/in person), Susitna River Coalition

(On record)

8:30:01

INTRODUCTION

MR. GILBERT: My name is Kirby Gilbert. I'm with MWH, a contractor to AEA. And welcome to this meeting today for the ISR, particularly on wildlife and botanical studies.

Those on the phone, can you hear me?

UNIDENTIFIED SPEAKER: Yes.

MR. GILBERT: Okay. All right. Well, we'll start with some introductions, and we'll just go over the agenda briefly, and a few introductory slides, and then we'll try to get into it.

Why don't we start around the room here, and if everybody could state their name.

There is a transcriber today, so everybody please try to speak clearly. And people in the back of the room, if you would just speak loudly. And as we get into the meeting, if you can stand up. The microphones are all on the table, so it's going to be hard for people on the phone if you're just sitting back and it's kind of quiet.

So maybe we could just start around the room, maybe go this way.

(Participants in meeting room introduce

themselves.)

MR. GILBERT: Okay, great. That's the group we have in the room. And just to remind everybody that when you -- if -- for comments and things, just state your name again, so she can make sure she gets it, just to attribute who said what.

So those on the phone, could you all please introduce yourself.

(Participants attending telephonically introduce themselves.)

MR. GILBERT: Okay, great. Well, thank you. And those on the phone, be sure if you -- be sure -- it's good if you practice to mute your phone if there's background noise, and please don't put us on hold because we'll get music. And so if you have to leave the line, just call back in. We'd appreciate that. Because everybody will hear the music if you -- if you put us on hold.

So -- and again, we will try to speak up. So just let us know on the phone if you can't hear, which I'm sure will happen once in a while, but we'll try to make sure we're speaking clear and into the microphones.

Okay. We'll go ahead, and we've got the GoTo meeting up with the slides. We also in this

room have an agenda posted. Hopefully those of you on the phone have looked at the agenda. It's posted online. As well as the presentations. We have 20 studies to go through today, so quite a few, quite a few presenters, and some of the presenters are on the phone also. So we just have to work -- work with everybody here to advance through this, but we want to try to use the time as best we can.

The agenda has it laid out in order. There is about I think nine before -- we have planned before lunch, and we may not end up following the agenda times exactly. If some studies go faster, then we'll keep things moving. But we'll try to stick to it as best we can.

Let's go through the first slides. They're just some introductory slides here to get everybody grounded. Some of you may have been at the meetings last week, and so we won't spend a lot of time, but I just wanted to present a little overview of what we're trying to accomplish.

This is part of the ISR, the Initial Study Report, meeting, and this is a -- is a check-in point really to look at progress on AEA's studies; 58 total studies the project commenced with, and this is basically the halfway point, although a lot of

you are well aware it has actually been kind of a long first half of the study's period.

The purpose of the meetings is to -- is to review the study results and discuss any modifications to the study plans and also any variances, and also it's a chance to ask questions and discuss the way the studies have proceeded, the results to date and -- and where the studies are going and the steps to complete the study.

And then this meeting is a check-in point, and I'll go over a couple of other points before it -- at the end of this, the goal of this is to get all the information in the record so FERC can make a determination at this point on the -- on the studies at this halfway point through the study period.

The initial study report is part of the integrated licensing process, and there are several parts to it that have been filed. Back in 2014 was the first installment of the initial study report, and AEA had filed at that time a Part A, B and C, which was a compilation on all 58 studies, of all the results of the first year of study, noting variances, where things varied from the original study plan, and modifications that would be -- for changes to the methods and study construct going forward. And that

was filed in June of 2014.

Additional technical memoranda were filed at the end of that year, case by case, on various studies. And then as you all know, some time lapsed, and late last year AEA was able to pick up and move -- move things ahead, and at that time AEA filed the fourth part of the ISR, which is what's called the Part D, and the intent of the Part D was to try to bring together all the pieces that had been -- all -- each -- for each study, try to bring together what the study had accomplished, what all the variances and modifications were at that time, and what are the steps to complete the study. So AEA -- the intent of the Part D was to try to be clear about where each study is at to date.

So those are pretty nice stand-alone documents. Hopefully they're useful as a road map for each study.

Now, in addition to the Part D, which is basically the road map, at the end of 2015-- end of last year, there were also several studies that had study completion reports or study implementation reports. So those go hand in hand, and those were all the results to date. And the study completion reports are for studies that have been deemed

completed, and we'll be discussing both of those today. We have some study completion reports and some study implementation reports to go over.

So that’s the way this works for the ISR. We've got the meetings last week for aquatic and this week for wildlife botanical, and social sciences tomorrow. And at the end of April here, April 24th, AEA will file the meeting summaries, the summary of all -- all of these five meetings, and those meeting summaries will try to document all the discussions and any proposed modifications that are brought up or -- from the licensing participants or others, and then AEA will also file the all the presentations at that time.

And then on June 23rd, after people have had a chance to look at these, and there may be some other conversations that happen, but licensing participants can file comments on the ISR or the meeting and any disagreements about summaries or recommendations or modifications to the studies.

And then August 22nd is the date in which licensing participants can respond to those, any disagreements or any questions that come up from the June 23rd filings.

And then finally this culminates with October 21st, with FERC issuing a study plan determination on this juncture for these -- all these studies, for the modifications going forward, any rulings on any new studies or any changes at all.

So as I mentioned, there was the three study meetings last week: Fish aquatics, some of the geomorphology, groundwater, ice processes, vegetation, instream flow. And one of the botanical studies, the riparian vegetation study, you'll note was discussed, too; but otherwise we'll cover the botanical and wildlife today. And then tomorrow in the same room we'll be covering a variety of the social sciences, cultural resources, and a few of the engineering and geology soils studies.

Okay. So this is the way we're going to try to run these and go through these today, we're going to -- we have short presentations for each of the studies, around five to ten minutes probably, and what we'll try to do is go over -- provide slides and information just to go over where the study is at, the highlights of the -- a little bit about -- briefly remind people of the study objectives. A lot of people have hopefully seen a lot of each of the studies, about highlights of where

the study's at, the results. And importantly, plans to complete the study and any modifications that AEA and the study team has to go forward and the rationale for those modifications.

It is an open meeting to discuss information about results, modifications, variations. So this is a chance to have that discussion after the presentation by the study leads and to ask questions.

There also are a few studies that have decision points, and we've discussed some of those last week, and we'll be discussing them, too, that were points in the study to provide direction going forward. And so those have been reported up also in the ISR.

So those are the main slides I have and -- but I have a few other if we need more clarification on anything.

We can now just open it for some general questions.

And Cassie, I believe you had a question on the presentations tomorrow. Betsy, those are all being posted today?

MS. McGREGOR: Yes, they are.

MR. GILBERT: Yeah. Okay.

MS. THOMAS: Okay. So any -- any ballpark

idea when?

MS. McGREGOR: Well, one of our limitations is trying to do this -- we have the same staff who posts the material that are involved in trying to facilitate the meetings. So before -- hopefully by lunch everything will be posted.

MS. THOMAS: Okay. Understood. But, see, I have the same limitation in that I'm trying to be at this meeting, but I also want to have time to review those presentations before tomorrow. So thanks.

MS. McGREGOR: Yeah. And just to clarify, there isn't new information presented in these presentations. They're just a reflection of everything that has been filed with FERC.

MS. THOMAS: I understand that. It's just that the approach I'm taking to try and manage this incredible amount of paper is to try to consolidate my notes on the presentations, and since that's what I've been doing for the last three days, I kind of want to continue that. So thanks.

MR. GILBERT: Yeah. Hopefully the presentations are a good snapshot. And each of the set of these, we'll be going through them, and that will also help inform everybody of what -- what

they're about. They aren't -- as Betsy said, there shouldn't really be new material. They were just -- just another way to provide a high-level summary where the study is at and what its results have been to date.

Are there any other general questions before we get into waterbirds?

Okay. Well, great. You can always ask later as we have time.

But let's just go right to it so we make sure we can keep moving, because we want to allow all the time we can. There's quite a few studies.

So the first study we're going to go through is waterbird migration, breeding, and habitat use.

So Brian, do you want to advance that, I guess? Tim is going to present that?

MR. OBRITSCHKEWITSCH: That's correct.

MR. LAWHEAD: Hello, I'm Brian Lawhead. I'm the wildlife program lead for ABR, and we'll be going through all of these studies today with various study leads, except for a few studies for which the study leads were not available, and in those cases I will be giving the presentation or Mark Burch from Fish & Game will be giving the presentation.

The first one -- we set these up to try and group them sort of by species groups for people who have various interests in different species groups and given the amount of material in some of these reports.

The first one is the waterbird migration, breeding, and habitat use study. The presentation is mostly going to be given by Tim Obritschkewitsch of ABR. This study was a two-year study. It's been completed. The presentation today is based on the study completion report.

One of the components of that study was a migration study, a ground-based visual and radar monitoring study that was conducted in 2013. And we have Brian Cooper on the line from Oregon who may be able to answer any questions about that. So sort of a tag-team effort here.

I will be advancing the slides. And, Tim, why don't you take it away.

MR. OBRITSCHKEWITSCH: Okay. Again, this is Tim Obritschkewitsch. And how am I coming through? Am I -- can you hear me all right there?

MR. LAWHEAD: You sound great.

MR. GILBERT: Yeah. Sounds good.

WATERBIRD MIGRATION, BREEDING, AND HABITAT USE

(Study 10.15) - Tim Obritschkewitsch, ABR

MR. OBRITSCHKEWITSCH: This is Study 10.15, Waterbird Migration, Breeding, and Habitat Use. The presentation will be less than ten minutes. I'm going to touch on the objectives and results only very briefly. Those details can be found in the study completion report which was filed in November of 2015.

For the purposes of this study, waterbirds broadly includes swans, geese, ducks, loons, grebes, cranes, cormorants, herons, gulls and terns, although no cormorants or herons were recorded in this study.

Status of the project: The study plan objectives have been met, and this study has been completed. The initial study report covering the 2013 field season was filed in June of 2014, and the study completion report covering both the 2013 and 2014 field seasons was filed in November of 2015.

Next slide, please.

Very briefly, our objectives included documenting the distribution, abundance, habitat use, and seasonal timing of waterbirds migrating through and breeding within the project area, and reviewing available information on food habits of fish-eating waterbirds in the study area in support of a mercury

bioaccumulation study.

Next slide, please.

Aerial surveys were flown at regular intervals throughout the project area during the spring and fall migration periods in 2013 and 2014, and ground-based radar and visual surveys were conducted from a site northwest of the proposed dam site during spring and fall of 2013. Surveys were flown for breeding birds and for birds in water bodies and for harlequin ducks in rivers.

Nests and broods of piscivorous birds were recorded in connection with the mercury study, although very few nests were discovered.

Next slide, please.

We had a few variances from the RSP. First, the number of surveys flown during migration was reduced, in part to maintain a five-day interval between surveys, each of which typically required more than one day to complete, and also in part because initiation and termination of migration surveys were dictated by ice conditions and breeding chronology, as was described in the study plan. As a result, we ended up conducting fewer surveys than expected, but we did cover the duration of spring and fall migration periods in both years.

Also, the term "Breeding-Pair Survey" in the RSP was replaced with "Breeding-Population Survey," which is a more inclusive method that includes all birds and not just those observed as breeding pairs.

Harlequin duck surveys were restricted to ten river miles beyond the study area buffer in both years due to logistical constraints. The distance of ten miles was chosen based on the published home range of harlequin ducks.

In the original RSP, ground-based visual surveys were to be conducted using a single observer. The Fish and Wildlife Service recommended the use of four observers, and this recommendation was accepted by FERC in the February 1, 2013, study plan determination. However, after further clarification and discussions, the Service dropped its recommendation, and ground-based visual surveys were conducted with a single observer as originally proposed.

Next slide, please.

Variances, continued: The Chulitna Corridor was not surveyed in 2014. The corridor was removed from the study area by AEA after the filing of the June 2014 ISR. The Denali East Corridor

option was added to the study area, and that corridor was surveyed in 2014.

And finally, after consulting with resource agencies to identify suitable target species for potential sampling, the collection of tissue samples of fish-eating waterbirds was consolidated under Study 5.7.

Next slide.

The study area for both years can be found in the Study Completion Report. Figure 3.1 in the SCR reflects the changes in the survey areas between 2013 and 2014, including removal of the Chulitna Corridor and the addition of the Denali East Corridor. Also shown here is the location of the radar sampling area in 2013.

Next slide, please.

The study site for ground-based radar and visual surveys in 2013 was located on the benchland about a half mile northwest of the proposed Watana dam site.

Next slide, please.

I won't go into the results in any detail, but in 2013 we had both aerial and ground-based surveys. The summary table -- this summary table of results is found in ISR Part B, Appendix T.

Next slide.

Ground-based visual and radar surveys documented relative abundance and peak occurrence of species groups moving past the study site, as well as detailed movement information, which are reported in the ISR and the SCR.

Next slide, please.

Aerial surveys were conducted in 2013 and 2014. The timing of surveys and results can be found in ISR Part A, Section 5, for 2013, and in Section 5 of the study completion report for both years.

Next slide.

Just as an example, here is the summary of waterbird observations during spring migration in 2013. I don't know how well that's -- you're able to see that at that scale. Similar data were collected during the pre-nesting, brood rearing and fall migration periods.

Next slide, please.

And this is the same for 2014.

Next slide.

These were harlequin duck locations along rivers during pre-nesting surveys in 2013.

Next slide.

And for 2014. Similar data were collected

during the brood rearing period for harlequin ducks each year.

Next slide, please.

Decision points. We had one decision point, which was whether to continue the ground-based visual migration survey for a second year. This would be based on an evaluation of the results from 2013. This was discussed in technical meetings on March 6th and April 9th, 2014, and was addressed in ISR Part C, Section 7, filed in June of 2014.

AEA considers the data obtained in 2013 to have met the objectives stated in the RSP. The radar and visual surveys of bird movements in 2013 were the most comprehensive migration surveys conducted for the Upper Susitna River basin to date, and the results have been compared with those of other studies in Interior and Southcentral Alaska. In ISR Part B, Appendix T, all that is given.

Next slide, please.

Modifications. All objectives and methods related to the mercury analysis have been consolidated under Study 5.7, Mercury Assessment and Potential for Bioaccumulation. Per the decision point, the study objectives related to the ground-based radar and visual migration studies were

met in 2013, and a second year of ground studies will not be conducted. The results were reported in ISR Parts A and B, Appendix T. There are no further modifications to this study.

Next slide.

The fieldwork, data analysis, and reporting have been completed and have successfully met the study objectives. Study 10.15 is complete.

Next slide.

Thank you for your time and attention. And I now welcome comments and questions.

MR. GILBERT: Thank you, Tim. That was really clear, and I appreciate the map of the -- I failed to mention the Chulitna Corridor and Denali East Corridor, which are part of the study areas for all studies. That is a change from the original plan.

So we can open it up to discussion or comments for Tim on waterbirds.

MR. LAWHEAD: I would like to make a request that whoever asks the questions speak clearly and repeat your name. We're trying to take notes on this meeting to prepare the meeting summary, and it's often hard for people, you know, elsewhere on the teleconference to hear. So if you're in the room

here in the back, please come forward near a speaker -- or a microphone, rather.

MR. GILBERT: Anybody have any questions for Tim?

MS. LONG: Yes, I do.

MR. GILBERT: Is that Becky?

MS. LONG: This is Becky Long from the Susitna River Coalition.

And so we only have one year of ground-based radar and visual? That was the decision point where you guys decided that one year was enough. So I'm just wondering that the break-up in 2013 is a -- an anomalous weather pattern. It was one of the latest break-ups in -- in recorded history that we've been talking about.

And I was just wondering, you don't think that that affected just the one year of looking at -- looking at the results?

MR. OBRITSCHKEWITSCH: I might throw -- I might throw that question to Brian.

MR. LAWHEAD: Yeah, sure. I was just going to comment that, yeah, that's correct. 2013 was an unusually late break-up, and we discussed this internally and also in the -- in the earlier ISR meeting and in the agency meetings. And the general

thinking is that while the timing of the migration probably was affected by that season, the -- you know, the occurrence of species in the area, the relative numbers of birds migrating through the area would not have been affected.

The timing would have been, and this is sort of bolstered by the results in 2014, the same from the aerial surveys, the same species groups were present, and the timing was a little bit shifted. The timing of breeding in 2013 was a little compressed because it was a late break-up, so you get different species groups coming out at different times, and the -- what we call the dabbling ducks, puddle ducks, tend to breed earlier than the diving ducks, which come a little bit later.

In 2013, that -- that timing was compressed. In 2014, it appeared to be a little more protracted, more like what you would expect on -- on a normal year.

The primary objective of the migration study was to identify, you know, the species and the magnitude of migration through the area rather than, you know, focusing too much on a timing. And the objective was to know what was using the area, what species groups were using the area, and to be able to

assess project impacts and develop protective and mitigative enhancement measures and look at things like potential collision with power lines or -- I know that early on one of the concerns of the Fish and Wildlife Service representative was potential collision of birds with the dam structure itself, I think, and also attraction to lights in the area.

So I would say that in terms of meeting the objectives of the study, the migration timing was less of a concern than the actual species that were present and the numbers of them moving through the area.

Does that...

MR. OBRITSCHKEWITSCH: I'd like to --

MS. LONG: All right. Thank you. Oh, go ahead. I'm sorry.

MR. LAWHEAD: No. I was...

MR. OBRITSCHKEWITSCH: Oh, sorry. I was just -- this is Tim Obritschkewitsch again.

Just to reiterate and elaborate a little on what Brian just said, timing of migration in the fall was very similar between the two years. The total number of birds and the -- and the species compositions were similar between the two years. And in the spring, the movements in 2014 or the use of

water bodies seemed to be shifted by a week or so but otherwise were similar on the total numbers and on -- on the species that were using the area. So that -- that's just -- that's where that is, yeah.

MS. LONG: Okay, good. Just a follow-up statement, Becky Long, is I just think it's important for when we get into PME measures, you know, during construction time, that, you know, we get it right. And it sounds like 2014 you guys adjusted -- or got out what probably the normal timing is and compared it with other studies in the Interior, I believe you said.

MR. LAWHEAD: The results of the -- of the 2013 study were compared with the results of other studies in Alaska that had been done, yeah, and all around Gakona, up and around Tok, down around Fire Island. So we -- we looked at the available data from similar studies and tried to compare, you know, the -- to get an idea of the -- to get a better idea of the context of migration in the -- in the project area compared to other known migration corridors.

MS. LONG: Thank you.

MR. GILBERT: Okay, great. Other -- any other questions?

MR. WOOD: This is Mike Wood.

MR. GILBERT: Okay, Mike.

MR. WOOD: Hi, guys.

Is there a study of the resident waterfowl, so the non-migratory waterfowl that hang out throughout the year, like hooded mergansers and mallards?

MR. LAWHEAD: So your question is regarding the presence of waterfowl in the project area during the winter?

MR. WOOD: Yes.

MR. LAWHEAD: There have been no winter surveys of waterfowl in the Upper River. You know, the thinking is that virtually all of the species in that area leave the area because of the winter conditions and the -- the amount of --

MR. WOOD: Okay.

MR. LAWHEAD: -- frozen water.

MR. WOOD: How about Middle River?

MR. LAWHEAD: No, there was no work -- no winter surveys done of waterfowl in the Middle River. I should point out --

MR. WOOD: Is there any --

MR. LAWHEAD: I should point out that hooded mergansers don't occur in Alaska. I think you might mean common mergansers.

MR. WOOD: Sorry. Yes, common.

But they -- are they not here year-round?

MR. LAWHEAD: A few are.

MR. WOOD: As well as mallards?

UNIDENTIFIED SPEAKER: (Indiscernible - lowered voice.)

MR. WOOD: Okay, a few.

And mallards, as well, now are starting to be more and more common throughout the winter.

MR. LAWHEAD: Yeah. That -- it's -- in various areas around Interior Alaska where there's open water in the wintertime, a few species, a few waterfowl species do hang out. The numbers are -- are very small. It's usually mallards and common goldeneyes in some areas. Typically around areas where there's springs or -- or groundwater upwellings, but the numbers are very small.

MR. WOOD: Okay. So will you be looking at the distribution of swans, as well?

MR. LAWHEAD: Swans were one of the species, yes, that were covered in the surveys.

MR. OBRITSCHKEWITSCH: Yeah, we did. We found swan nests, particularly in the Denali West Corridor, up on the north end of -- north end, and then near Cantwell. And then migrating flocks of

swans tended to be found more on -- on the lakes down in the -- the Gold Creek Corridor, on Stephen and Murder Lakes and those sorts of places. But we do have quite a few detailed information on swans. They're pretty easy to track during the -- during the nesting and brood rearing period. We did surveys through the entire breeding season.

MR. WOOD: And that includes the Middle River? So the breeding pairs that hang out in -- in the sloughs and side channels?

MR. OBRITSCHKEWITSCH: Yeah. We --

MR. LAWHEAD: The surveys -- the surveys were done within a three -- I think it was a three-mile buffer around the transportation access corridor, around the alignments. So, yeah, they did extend down to Gold Creek, not all the way down to Talkeetna.

MR. WOOD: Thank you.

MR. LAWHEAD: Any other questions or comments?

All right. Hearing none, we will move on to the next study, which is 10.14 Surveys of Eagles and Other Raptors. That will be presented by John Shook of ABR. I hope he's able to do a good job. He may be a little impaired. He just ran a hundred mile

race on -- from Sunday to Monday. He may be a little slow on his feet. I don't know.

So we'll pull the -- pull this up, and then I'll turn it over to you, John.

I should mention that there will be a slight delay when I switch the slide. So if you hear a pause, that's why he's -- it will take him a little bit to see the slide after it's changed.

Okay, John, you ready?

MR. SHOOK: All right. Yeah. Can you hear me okay?

MR. LAWHEAD: Yup. Take it away.

SURVEYS OF EAGLES AND OTHER RAPTORS

(Study 10.14) - John Shook, ABR

MR. SHOOK: Yeah. Let's -- we're going to breeze over some of the objectives and results and stuff that have been well-documented in previous presentations and reports and concentrate on some other points that are important for these presentations. So we submitted the ISR in June of 2014 and the Study Implementation Report, November of 2015. Other studies not complete, so there's not a Study Completion Report.

Overall some status highlights, that we conducted occupancy and productivity surveys for

nesting raptors in 2012 to 2014. In 2013 we completed the first year of woodland raptor surveys, nest viability surveys and raptor migration surveys. In 2012 and '13, we completed two years of surveys for fall and wintering raptors for their communal roosts or foraging areas. And we have also been continuously delineating eagle nesting habitat for the nesting raptors in 2012 to 2014.

Next.

Further status on Study 10.14. We didn't do any field surveys in 2015, but we did conduct some analyses. We continued to update the geospatially referenced relational database for raptor nests. It's quite a large database now with all the nests in there. And then we continued delineating the eagle nesting habitat.

Next slide. Thank you.

Again, these objectives have been discussed and presented in reports, so I'm not going to go through each of them, but you can see them here.

Next slide.

The major study components included three major field efforts; the first three bullets here: The nesting surveys, foraging and roost surveys in the winter and fall, the migration surveys. And then

there was -- mercury assessment we'll talk about later. That was deferred to a different study. And -- but we also did a delineation of eagle nesting habitat; mostly like a GIS exercise.

Next.

Our variances for this study were fairly minor. We had two study area variances, which have been discussed as far as -- in other studies, so I won't -- I don't need to go into them. Basically the Denali East and the Chulitna. But we also had -- for the migration survey, we did not have some land access permits that -- that prevented a few migration points from being conducted in that year.

And then the feather samples couldn't be obtained because of salvage permit delays. So we couldn't get the permit in time for that year. And later we decided it was -- it was better to move that study to the -- to the mercury study.

And then in 2014 again, the Chulitna Corridor was eliminated, so that was a variance.

Next slide.

I'm just going to gloss over the results. This is 2013 results of nest occupancy and productivity surveys. The major take-homes here are the first column, total nests, these are just nest

structures. Eagles were the most dominant raptor here, primarily golden eagles in the mountainous areas, and even, you know, smaller rock outcrops, and then bald eagles closer to riparian areas.

And of note is that they -- they, eagles, had pretty low nesting success, the last -- the last couple of columns on the right, in 2013.

Next slide.

In 2014, similar -- most of the raptors are golden -- or golden and bald eagles, and they also had fairly low nesting success in 2014.

Next.

This map displays just the eagle nests, the golden eagles in yellow and the bald eagles in red, so that you can just get an idea of their distribution. Again, these are nest structures, they're not all occupied. The occupied structures are the stars.

Next slide.

MR. LAWHEAD: One thing you might point out here, John, is that that expanded building of the survey area, the buffer around the reservoir was -- I think was -- was it ten miles instead of three or something like that?

MR. SHOOK: Correct. It was ten, yes.

Okay. Next slide is the 2014, just to show you the -- the Denali East survey area in the upper right was added and the Chulitna was eliminated. Generally, that just -- yeah, the distribution of nests, very similar between the years.

Next slide.

And the next slide, so this is the -- all the other raptors: Northern goshawks, red-tail hawks, gyrfalcon, peregrine falcon, common raven and some unidentified species of nests. So most of the nests you'll see here that are the non-eagle nests are peregrine falcons and common ravens.

It's noteworthy that in the 1980s the studies did not find any peregrine falcon nests. So this might represent a range extension for that species, which has been seen elsewhere in the state and reported in other publications.

Next slide.

Brian?

MR. LAWHEAD: And one other comment I'll note here is that the unidentified raptor is because you found a nest but there was no species associated with it. It's not like there was a mystery species out there somewhere.

MR. SHOOK: Correct. Yeah, that's a good

point. Yeah, these are like -- these are nest structures. So those are like -- the unidentified ones are usually stick nests that are located on a cliff or in a tree that you can't tell the species.

And then this is just 2014, the same species, again showing the Denali East and Chulitna modify -- or, changes.

Next slide.

This is a fairly comprehensive slide of migration points. We had several migration points, which are the red dots spread throughout corridors, and these diagrams show both the abundance and direction of travel of migrating raptors. And there's no -- no evident pattern here, a non-random pattern. It's fairly -- nothing came out really clear that showed a very directed migration.

The different colors are different species, but the major take-home is that we did not -- we did not discover a major, like, corridor for raptors in -- in this year.

Next slide.

And these represent the four other studies. We did a nest sightibility study during our nesting surveys. We also did woodland raptor surveys within the proposed reservoir zone, and in the winter and

fall we did foraging and communal roosting surveys, and we also delineated in that same habitat.

The results of the sightability surveys was that they really helped correct -- they will help correct total numbers with a sightibility correction factor that would be performed at the completion of the studies.

The woodland raptor surveys showed that their low detectability on normal plots, but that when we performed our high-intensity plots, we detected several more -- or a few more nests. And the steep terrain of the study area in the reservoir complicated the surveys, which decreased the sightibility, and we suggested some modifications for future surveys, which we'll go into.

The foraging and communal roosting surveys didn't show any concentration of wintering raptors. And then the analysis for the nesting eagles will be used to delineate potential breeding or foraging habitats for the future.

Next slide.

The proposed modifications to Study 10.14, fairly minor. We have four of them. The first one is the elimination of the Chulitna Corridor and addition of Denali East. The woodland raptor

surveys, we're going to adjust the intensity to account for the results that we've had. With this steep terrain, we think that the methods could be improved. We're going to reduce -- we'll reduce the coverage area and increase the intensity in that coverage area, which we think will give better results.

Two more, on the next slide, two more proposed modifications. We feel that the two years of foraging and communal roosting surveys were adequate. We didn't identify any major concentrations of wintering eagles. And then the mercury analysis objectives will just move to Study 5.7.

So next slide.

The steps to complete the study are, for the raptor nest and occupancy surveys and woodland raptor surveys, we need to complete those. And the spring and fall migration surveys, we need another year of those, along potential power line transmission routes. Another season of sightibility assessments for raptor nesting surveys, and then complete the delineation of bald and golden eagle nesting habitats when all the fieldwork is completed.

So that's the end of my presentation. If

there's any questions -- more clarifications that Brian might point out or if anybody has questions or comments, add time. Thank you.

MR. LAWHEAD: Thanks, John.

MR. GILBERT: Any questions?

MS. McCRACKEN: I just have a comment.

MR. GILBERT: Sure, go ahead.

MR. LAWHEAD: Betsy McCracken. Sorry.

MS. McCRACKEN: This is Betsy McCracken with the Fish and Wildlife Service, and I just wanted to get on the record -- can you hear me okay?

MR. LAWHEAD: I don't know if --

Can you hear her?

MR. SHOOK: No, I can't quite hear her.

MR. LAWHEAD: Okay. She's coming up to the table.

MR. GILBERT: There you go.

MS. McCRACKEN: This is Betsy McCracken with the Fish and Wildlife Service, and I just wanted to get on the record with regards to the wildlife studies, as in the past throughout this ILP process, we will be -- we only have the staffing resources to address the avian Studies 10.14, 10.15, 10.16, and we will be doing that through our written comments. We've recently had a turnover in staff, and so we

are -- we are going to continue with our participation, but it will be through our written comments.

And also I wanted to state for the record that last week, during the water quality studies, 5.7 for the mercury reassessment, we did bring up our concerns related to the lack of blood and feather samples for the birds.

So that's it, for the record. Thank you.

MR. GILBERT: Okay. Thanks.

MR. SHOOK: Okay. Thanks.

MR. GILBERT: Betsy.

MR. HANKINS: This is Jesse Hankins here. You've put together a large data set. I'm curious, is that nest data available, or will it be made available to, say, agency personnel?

MR. LAWHEAD: Did you hear that, John?

MR. SHOOK: I think I heard. He's asking if the nest data will be available for state agency personnel?

MR. LAWHEAD: Well, he's with BLM. Agency personnel in general, I think.

MS. McGREGOR: I can answer that question.

MR. LAWHEAD: Yeah.

MS. McGREGOR: Any data requests for any of the information goes through AEA, and we're happy to make data available to regulatory agencies. Some of this data, though, we don't ordinarily file with FERC. We don't -- we don't want it out for the public because of the sensitive nature of it. But we did in the past, we have provided all the raptor data to the Fish and Wildlife Service. So if you just make the request, and, you know, it's actually going to be used in a responsible manner, we'd be happy to pass it on.

MS. LONG: Hi. This is Becky Long from SRC. Okay to ask a question?

MR. GILBERT: Yes.

MR. LAWHEAD: Please, go ahead, Becky.

MS. LONG: Okay. I have two questions. I just was wondering if you guys came to an analysis of the low nesting success in '013 and '014. And my second question is, is you talked about this in the October '014 meetings about the -- you know, after the anomalous break-up in 2013, you all discussed that it was possible migration was delayed until after the surveys were ended, and you couldn't really conclude whether the migration was delayed or just didn't show up. You know, you said it was hard to

make a definite conclusion, especially from one-year studies.

I just wonder if you have made other conclusions or if what I just stated is still what you think.

MR. SHOOK: For the first question, the analysis of low nesting success in 2014 and 2013: We did address these questions in -- in the discussion of the reports and compared them to other results, especially in nearby Denali National Park. It -- and it appears that there was low nesting success in -- in other areas, as well. In Denali they also did an index of snowshoe hares during their surveys, and they found low numbers of snowshoe hares, which corresponds to low nesting success for golden eagles. And we anecdotally found, you know, similar patterns that we were not seeing many snowshoe hares out there, and that may be one reason for the low nesting success. And there -- that's further discussed in the -- in the discussion of the reports, but that's -- that might -- that might account for the low nesting success.

Yeah. And, Brian, you want to hit on the 2013 weather question? Similar -- similar response, probably, to what -- what you had for Tim.

MR. LAWHEAD: Yeah, I think that's true. I mean, her -- I don't recall us saying before that we thought that we missed migration occurring after the end of the surveys. I mean, I would have...

John, do you remember that? In the -- those migration surveys ended at a pretty reasonable time, I think, I mean, in the normal...

You know, and we did have migration coverage with the ground-based and radar migration survey element that went quite a bit farther into the spring, too.

The main concern with those migration surveys along the transmission corridor was to address concerns of the Fish and Wildlife Service related to the potential for collision of raptors, and most of the species in the -- most of the raptors in the area are eagles, and they tend to migrate pretty early.

MR. SHOOK: Yeah, that sounds correct.

MS. LONG: The things I brought up were pretty much direct quotes from the transcript, so that's the reason why I said them.

MR. LAWHEAD: Huh. We'll look -- we'll take another look -- take another look at that, but I don't remember stating that we thought we missed a

bunch of migration after the -- after the surveys ended. But comment is noted, and we'll take a look at that.

MS. KNOLL: This is Erin Knoll, U.S. Fish and Wildlife Service.

Hey, I had a quick question on the buffer, the golden eagle buffer.

MR. LAWHEAD: Just a second.

Can you hear her, John?

MR. SHOOK: Yes.

MS. KNOLL: All right. The golden eagle buffer, ten miles. Was that five miles on either side or ten miles on either side?

MR. LAWHEAD: It's ten miles.

MS. KNOLL: Okay.

MR. SHOOK: It's ten, yeah.

MS. KNOLL: Ten, okay.

And then has there been any talk or discussion of the smaller raptors and owls that are not picked up in the other surveys as to how to quantify them or if any additional surveys will be done to look at them?

MR. SHOOK: Well, those -- yeah. The smaller raptors, they're difficult to quantify from aerial surveys. They're accounted for somewhat in

the landbird -- the landbird studies that pick up nesting raptors on those -- on point counts, and also with the habitat, wildlife habitat analyses to estimate kind of the habitats that they may use.

We did -- we did observe some smaller raptor species from aerial surveys, including merlins, because they're highly territorial, so they may flush out and fly around, so you tend to see some of those. But on these aerial surveys we normally see great horned owl nests and great gray owl nests and red-tail hawk nests in trees in other survey areas, and it was very interesting that we didn't find any great horned owls or great gray owls nesting, and only one pair of red-tail hawks. So it was assumed to be not many of those around in this area.

MR. LAWHEAD: Yeah. And I can address -- and the question early on in the development of the study plan, the question came up from Maureen DeZeeuw with Fish and Wildlife Service about -- specifically about, like, owls, boreal owls, hawk owls. And short of trying to go out and do winter surveys, which we kind of nichts'd on the basis of, you know, logistic and safety concerns, we agreed that we would assume they were present and address

them in the wildlife habitat evaluation based on existing information from the literature. In other words, her concern was that we not include that they weren't present because we didn't do surveys for them.

MS. KNOLL: So Maureen is no longer with the Service, so I'm kind of picking up her notes --

MR. LAWHEAD: Sure.

MS. KNOLL: -- and trying to figure out where we --

MR. LAWHEAD: Sure, I understand.

MS. KNOLL: -- stand with things.

MR. LAWHEAD: Yeah. But it is -- as John explained, it was difficult to pick up some of the smaller raptors from the aerial surveys, like (indiscernible - simultaneous speech) --

MS. KNOLL: Yeah. I would --

MR. LAWHEAD: -- (indiscernible - simultaneous speech) and things like that.

So we're just going to use the best available information we can to make sure that that wildlife habitat evaluation is for all the species, in other words.

MS. KNOLL: Yeah. I would just like to add --

MR. SHOOK: (Indiscernible - simultaneous speech.)

MR. LAWHEAD: Go ahead.

MR. SHOOK: Point counts from the landbird surveys definitely pick up some of these nesting smaller, smaller birds, and they're -- as a pretty good distribution across habitat sites, so that wildlife habitat exercise I think will be valuable.

MR. SCHICK: This is Terry Schick from ABR. I'll be talking about the landbird/shorebird study here in a moment. But I would emphasize the habitat use evaluation for smaller woodland nesting raptors, because the landbird/shorebird surveys were in late May and June, so you're a little bit late for some of the woodland nesting raptors. I'm not sure that -- I would have to go back and look, but I'm not sure we've located nests for those species. Certainly had a lot of them. They're never very abundant anyway. They're uncommon and they're widely disbursed.

But as Brian pointed out, the wildlife habitat use evaluation will certainly pinpoint suitable habitats for those species in the study area.

MR. LAWHEAD: And we'll talk about that

study a little bit more in the afternoon, too, the wildlife habitat one.

MS. McGREGOR: I just want to add, since Erin is new, we did go through consultation with the Fish and Wildlife Service to develop the ten-mile buffer area.

MS. KNOLL: That's -- I figured you did, I just wasn't able to locate it in the notes yet, so...

MS. McGREGOR: We've had turnover in other agencies, too, and some of our consultation record that's very helpful is in the appendices of the preliminary study plan.

MS. KNOLL: Okay.

MR. LAWHEAD: Yeah. And that ten-mile buffer was added at the request of the eagle permitting folks to be able to evaluate potential for territory take.

MS. KNOLL: Yeah. And that's our standard recommendation, so I just --

MR. LAWHEAD: Right.

MS. KNOLL: I just wanted clarification.

Sorry. Looking at appendices?

MR. GILBERT: Good question.

MS. McGREGOR: In the preliminary study plan, the PSP. Was that June, July of 2012?

MR. LAWHEAD: '12, yeah.

MS. McGREGOR: And it's on our website. So the consultation records for all the wildlife resources will be at the end of the wildlife resources section.

MR. GILBERT: And it's by study, so you can look it up, so it is all there. There are a lot of documents to go back through, no doubt.

MR. MITCHNICK: Could you touch a little bit on territorial take, exactly what constitutes territorial take?

MR. GILBERT: Alan Mitchnick from FERC speaking.

MR. LAWHEAD: Yeah. Did you hear that, John?

MR. SHOOK: I did not quite hear it, no.

MR. LAWHEAD: Okay. So Alan Mitchnick of FERC wants a little bit more explanation of the territory take as opposed to nest take. So it -- I mean, I can try to take a stab at it, but you're better informed on the eagle permitting issue than I am.

MR. SHOOK: Well, I would -- if I could, I would defer to, yeah, folks at Fish and Wildlife that have more experience with this. Because this --

this goes into part -- this is outside of the scope of our -- our reports, really, because we didn't go into any impact analysis, so we didn't discuss territory take.

MR. LAWHEAD: Right. But it -- but it is a concern for these species, particularly for golden eagles, and it's something like -- the ten miles is based on, what, is it, like, double the mean internest distance or something like that? So it's a larger --

MR. SHOOK: Yeah.

MR. LAWHEAD: -- area just than the nests. You know, under the bald and golden eagle protection act, nest take is regulated, but -- but territory take is also a concern in the -- in the area of the reservoir inundation zone because it would flood potential foraging habitat. That's my understanding that that was -- that was why the Fish and Wildlife Service was concerned about that, habitat alterating -- altering activity affecting, you know, the quality of the nesting territories, so they want to look at a larger area.

MR. MITCHNICK: Okay. Well, we'll talk more about this later.

MR. GILBERT: Okay.

MR. LAWHEAD: Does Fish and Wildlife Service have any more to add about it?

No? Okay.

MR. GILBERT: Any other questions or comments on the raptors?

MR. WOOD: This is Mike Wood.

MR. GILBERT: Sure. Mike, go ahead.

MR. WOOD: I just want to comment that there has been increased number of snowy owls in that area the last couple winters, especially at Gold Creek Corridor, and -- and also I spend a lot of time there and do see red-tail hawks.

MR. SHOOK: Okay. That's good information. In the -- the snowy owls, what time of winter are you seeing them?

MR. WOOD: I've seen them through January, February, March and into April. And there has been increased number of red-backed voles, too, so maybe that's corresponding with that up there, but in this area in general there's a lot more red-backed voles.

MR. SHOOK: Okay. Thank you.

MR. WOOD: Thanks.

MR. LAWHEAD: Yeah. I would make the comment, I think that in general we were surprised at how few red-tailed hawks were recorded on surveys in

the -- in the Upper River stretch in the area of the reservoir zone in the intensive studies that were done for the migration surveys.

I think there was -- you only found one nest in all the --

MR. SHOOK: Yeah. We found one nest, and then the next year there was a pair of red-tails occupying that area, but we couldn't locate a nest or they were not nesting. And we didn't -- you know, our studies -- if you saw a study area map, we didn't go all the way to Talkeetna, and it's possible -- it's possible that lower elevation areas could have more red-tails, areas that are outside of our study area, red-tails, nesting red-tails, anyways.

MR. LAWHEAD: Any other comment --

MR. WOOD: Just a clarification, John. Well, I'm just talking about the Gold Creek area and Target Lake and, like, and the state land that goes between Stephan Lake and Gold -- and Gold Creek.

MR. SHOOK: Okay.

MR. WOOD: Up high in the tundra.

MR. SHOOK: Oh, okay. Well, that's good. Interesting.

MR. LAWHEAD: And one comment I would make about the snowy owls for the benefit of other

listeners is they don't nest in the area, and that species is widely known to be transient in a lot of areas, depending on the nature of the breeding success in the summer on Arctic tundra and the amount of food available in the winter in various wintering areas. It's a highly eruptive species and moves around a lot in different parts, even different parts of the continent.

MR. WOOD: Okay.

MR. LAWHEAD: Okay. Any other questions?

If not, we will move on to Study 10.16, Terry Schick.

MR. SCHICK: Okay. We're getting close to ten o'clock, so I am going to have to move very --

MR. LAWHEAD: We're going to click through this, Terry.

MR. SCHICK: We're not going to -- okay, five to ten minutes for this presentation, folks.

LANDBIRD AND SHOREBIRD MIGRATION, BREEDING, AND HABITAT USE

(Study 10.16) - Terry Schick, ABR.

MR. SCHICK: There are a lot of slides here. Most of this, as everyone has mentioned already, is present in a number of documents in the ISR Parts A, B and C, and Part D. So I won't go into

all of these details, but all of this is here for the record. It's a nice, more concise summary of the status of the study and what needs to be done from here.

MR. LAWHEAD: Just click.

MR. SCHICK: Right there, yeah.

So, study objectives, I'm not going to go into great detail here. Basically, this is a baseline study to collect information on distribution and abundance of landbirds and shorebirds in the study area, with the ultimate goal of using that information to assess the impacts to these species from the proposed project. That involves identifying habitat associations, and another major goal is to compare current information to the distribution, abundance, and habitat use of these same species that were collected in the 1980s for the APA project.

Study components. There are three primary study components: Point count surveys in May and June for breeding landbirds and shorebirds; and then, transect surveys along riverine corridors and around lacustrine water bodies to pick up species that typically are recorded in lower numbers on point counts, species that are focused on these riverine and lacustrine habitats, which tend to be

undersampled in point count surveys. And then, specific surveys for nesting swallow colonies in the reservoir inundation zone.

So the status of this study, ISR Parts A, B, and C, were filed in June of 2014.

UNIDENTIFIED SPEAKER: '13.

MR. SCHICK: Details of the survey results from May and June of 2013, then in October 2014 there was an ISR meeting very similar to this one which summarized the 2013 results.

The 2014 study implementation report, which was completed in November of 2015 details the survey results from the 2014 field season. And the ISR Part D provides an overall summary of all the tasks and documents filed for the study.

Variances. There's a number of variances for the study. They were implemented to improve study methods and/or adapt to changes in the study area. We used a different method to allocate point count, plot locations. In 2013 and 2014, there was actually an improvement over the recommended method in the RSP.

Then there were two reductions in survey area in 2013 because we didn't have fine scale vegetation data to allocate plots in some locations,

which was corrected in 2014; and we didn't have access to Cook Inlet Region Working Group lands in 2013. That was also corrected in 2014.

Helicopter surveys were used for swallow colony surveys, which improved spatial coverage and efficiency. And that also allowed us to survey a much larger area than proposed. So we surveyed a full two-mile buffer; that is, two miles on either side of the upper extent of the reservoir at high water, kind of around the dam and camp site.

Then in 2014 we have the study area alterations, which we've discussed: The addition of the Denali East Corridor and the removal of the Chulitna Corridor.

We used a half mile buffer around all private land parcels and Alaska Railroad Corporation land, which really only occurs at the far western part of the Gold Creek Corridor, to ensure that we weren't sampling on lands that we did not have access to.

And in 2014, we eliminated the point count survey component of the riverine-focused transect surveys, which was really a trial survey platform in 2013, and we dropped those because noise from riverine -- riverine noise frequently was inhibiting

detection, songbirds, point count surveys. Primarily detecting birds by ear, and when you have noise interference, the data are not that good. So we eliminated that in 2014, continued the transect surveys, which provide some interesting data.

A couple more variances in 2014. Partly at the request of Fish and Wildlife Service, we changed the metric for the riverine-focused surveys from birds per unit, time spent surveying, to a linear density measurement: Birds per kilometer of stream length. And we'll have these data for 2013 and 2014. In fact, we're working up that information right now for the study completion report.

And then in 2014, we implemented line transect distance sampling methods for the riverine transect surveys, which may allow us to calculate corrected -- density estimates corrected for detectability. That remains to be seen, but we have those data now, and we're working those into the study completion report.

Summary of results. I will have to click through this pretty quickly. We collected lots of point count data. Over 2500 point counts were conducted across both years. This is a huge sample size. It's probably the most intensive individual

point count study that has been conducted in Alaska. And then in -- for riverine-focused and lacustrine-focused surveys, we conducted these across both years. Essentially we surveyed all of the safely accessible riverine corridors that provided habitat suitable for landbirds and shorebirds in the reservoir area and the dam and campsite area. This includes the Susitna River and the clear water tributary streams running into it.

And in 2013, we found a total of 25 nesting swallow colonies in the reservoir area, in the two-mile study buffer.

This is a depiction of the current study area, with the Denali East Corridor added, the Chulitna Corridor removed. As you can see, there are a bunch of point counts that were conducted in 2013 in the Chulitna Corridor. Those data will still be used for habitat use analysis, and we hope to use them also in habitat-based density analyses that we can apply to the revised study area.

And this is the same map, indicating the location of the riverine- and lacustrine-focused survey transects in both study years, both study years.

So I'm not going to go into great detail

here. This is a very data-rich study. We have data on 60 landbird species across both years. The tables tend to be very large. But the area for landbirds is definitely dominated by sparrows, finches, thrushes and warblers, fox sparrows, white-crowned sparrows, common blackpoll, yellow rumped warbler, varied thrush, Savannah sparrow, ruby-crowned kinglet, American tree sparrow, dark-eyed junco, Wilson's warbler, and gray-cheeked thrush were especially abundant in both study years. We were able to calculate just 2013 data only. We haven't analyzed 2014 yet.

There were sufficient numbers of observations to calculate densities for 38 of those 53 species that were recorded in 2013 only.

As you might expect in a primarily forested habitat in the study area, shorebirds are not nearly as common. We found 14 species across both study years. Numbers were substantially lower in shorebirds, which they are normally. Shorebirds are less common and more widely disbursed, and there are fewer open areas for breeding for shorebird species. But there were a number of species that were regularly recorded. Wilson's snipe, by far, was the most abundant, but American golden plovers were also

found at higher elevations, lesser yellowlegs, least sandpiper, spotted sandpiper especially in riverine habitats. Red-necked phalarope in lacustrine water bodies. Whimbrel, semipalmated plover at higher elevations, and solitary sandpiper, all were regularly recorded in low numbers. Because of those low numbers, we were not able to calculate corrected densities for shorebirds in 2013. We're hoping that the combined data from 2013/2014 will allow us to do that, at least for some shorebirds, at least.

Lacustrine-focused surveys. These are pretty basic data indicating the number of birds observed on lacustrine shore lines and in adjacent habitats. There were some patterns across both years. Rusty blackbirds, Savannah sparrow, American robin, Bohemian waxwing, Wilson's warbler, fox sparrow, yellow-rumped warbler, hermit thrush and bank swallows foraging above lacustrine water bodies were pretty commonly recorded in both study years.

For shorebirds, rednecked phalaropes were by far the most abundant shorebird, using lacustrine water bodies, which is not surprising. That's -- that's where they breed.

Other species were also present. However, pectoral sandpiper as a migrant only. In May,

Wilson's snipe, Lesser yellowlegs, least sandpiper and solitary sandpiper were also commonly recorded using lacustrine water bodies and adjacent habitats.

Riverine-focused surveys. A number of landbirds that are associated with riverine corridors, in particular, northern water thrush and blackpoll warbler, were recorded commonly in both study years. Fox sparrows, Wilson's warblers, both shrub specialists were especially common. Yellow-rumped warbler, Swainson's thrush, Ruby-crowned kinglet, varied thrush were recorded in riverine forested habitats along stream drainages. White-crowned sparrows were also pretty common in forest, hedge and scrub habitats in both study years.

Notable for shorebirds was the spotted sandpiper, accounted for 97 to 98 percent of all shorebird observations in both study years. It appeared that they were defending distinct territories along the Susitna River. You could almost predict when you were going to see another spotted sandpiper as you walked along the survey transect.

Other shorebird species that were commonly recorded in riverine habitats were the least sandpiper, Lesser yellowlegs, solitary sandpiper, and

Wilson's snipe.

This is the depiction of location of the 25 swallow colonies found in 2013. Largely these were bank swallows. A couple colonies were mixed, bank swallow and violet green swallow colonies.

And this is just a depiction of a couple different habitat types used by swallows. Permanent cliffs were definitely popular, especially at the top where they were a little bit safer from depredation by bears, in particular, but some recently fresh-cut banks along the Susitna River were also used in 2013. Some of these areas suffered pretty heavy depredation, probably by bears, because they were more accessible.

So proposed modifications for Study 10.16 going forward. Like the riverine-focused surveys for the lacustrine-focused data, we will present the data as total number of birds recorded on lacustrine water bodies as opposed to the number of birds per unit time which was described in the RSP.

The comparisons to the 1980s data will be made in the Study Completion Report, which we're working on now.

And then we -- in the RSP, it described possible collection of feathers from belted

kingfishers for mercury analysis. That task has been consolidated under Study 5.7, but I also should point out that it was decided that belted kingfishers were just not nearly common enough to collect enough feathers to make this really a viable target species for the mercury assessment study.

Additional modification. The study team has determined that one to two years of data, depending upon the field survey concerns, are probably sufficient to meet the study objectives. As I mentioned, there's a very large number of point counts conducted. In the two study years, over 50 to 70 percent greater than the sampling goal that was set forth in the RSP.

We have a large number of data to evaluate baseline distribution, abundance, and habitat use for landbirds and shorebirds in the study area. We also have good data in two study years for riverine- and lacustrine-focused surveys. And these data, although they're not -- they will not be corrected for detectability, should provide adequate data to provide minimum estimates in the number of landbirds and shorebirds that could be affected by development of the proposed project.

Additionally, we have data from 2014 for

line-transect distance sampling that may allow us to calculate corrected densities for the riverine transect survey data. And lastly, we used a more efficient survey platform, helicopter instead of a boat-based survey, for colonial nesting swallows. And that facilitated a much more comprehensive and more efficient survey for those nesting swallows. And again, we should have good data to provide minimum estimate number of swallows that could be affected by the proposed project.

Current status. Surveys were completed in 2013 and 2014, as described in the RSP. We had many more point count surveys than the goal that was listed in the RSP, as I had mentioned. Riverine- and lacustrine-focused surveys were completed in both years as described in the RSP.

And we did swallow colony surveys in 2013 only but within a larger study area and greater efficiency than was indicated in the RSP.

Steps to complete the study. We are working on all of these right now, combining the two years of landbird and shorebird data to compare those numbers and their -- well, numbers and habitat use, really, for current numbers to the data from the 1980s, to evaluate any long-term changes in

occurrence and abundance.

We will be combining the two years of data and conducting removal and distance analyses to improve detection functions, improve the estimates of detectability, and provide corrected density estimates for as many landbirds and hopefully shorebirds as possible for the study.

We may be able to calculate corrected densities also for the 2014 data only along riverine-focused transects. That remains to be seen based upon the numbers of data and the distribution of the birds along those transects.

In either case, we'll have uncorrected riverine transect data for both study years to calculate minimum estimates in the number of birds along kilometers of stream, like in the reservoir inundation zone and the dam and camp site area.

And we will also provide more detailed habitat use analyses over preliminary analyses prepared for habitat use in the ISR in Part A, but we'll have two years of data to provide much more rigorous habitat use analyses in the study completion report.

And so that's all I have got at the moment. Anyone is welcome to ask questions.

MR. GILBERT: Questions, comments, for Terry?

UNIDENTIFIED SPEAKER: (Indiscernible - noise.)

UNIDENTIFIED SPEAKER: Can you hear me?

MR. GILBERT: Yeah. Mike, can you just --

MR. SCHICK: Yes.

MR. GILBERT: -- hold a minute? Erin has a comment from Fish and Wildlife.

MR. LAWHEAD: Come to the table.

MR. GILBERT: Yeah. Go ahead, Erin.

MS. KNOLL: Hey, yeah, Erin Knoll, U.S. Fish and Wildlife Service.

I was curious how far downstream you guys surveyed swallows and shorebirds from the dam site.

MR. SCHICK: Well, it's a two-mile buffer. So that's two miles on either side of the study area. So we surveyed two miles downstream of the proposed dam site.

MS. KNOLL: Okay. So let's assume, then, that the effects of the dam will stop at two miles?

I just moved up from Arkansas, where, you know --

MR. SCHICK: Yeah. I -- you know --

MS. KNOLL: I remember that we had this

(indiscernible) down, so...

MR. SCHICK: That's a question for another --

MS. KNOLL: It's a much bigger question, I guess, but...

MR. SCHICK: -- study in terms of stage and flow effects; you know, hydrology questions, really.

MS. KNOLL: Yeah. Okay.

MR. SCHICK: But the focus really of the colonial nesting swallow surveys was to try to get an estimate of how many colonies could be actually impacted by filling the reservoir itself. It was less of a downstream effects question.

MS. KNOLL: Were the shorebirds surveyed downstream at all, or were they all within the --

MR. SCHICK: Shorebirds --

MS. KNOLL: -- (indiscernible - simultaneous speech).

MR. SCHICK: -- were surveyed throughout the full study area. So two miles around the reservoir, the dam, and campsite, and then two miles around each of the proposed corridors.

MS. KNOLL: Okay. Okay. I know you had the backup, but I just (indiscernible - lowered voice).

MR. SCHICK: Yeah.

MR. GILBERT: Okay. Mike Wood, can you hear us? Did you have a question?

MR. WOOD: Yes. I didn't -- I didn't hear that last answer about how far around they were -- where the studies were conducted.

I guess my question is did -- were studies conducted in the Middle River, as well, for these birds? And then I've got a follow-up.

MR. SCHICK: Middle River, not really, no. Again, this study was really focused on potential effects of filling of the reservoir, construction of the dam, and construction of access roads and transmission lines for the proposed project, less so on downstream effects on these species.

MR. WOOD: Okay. Thank you. I mean, I -- the reason why is because you mentioned the belted kingfisher, and there wasn't enough to talk about or mention really. But in the Middle River from Portage all the way down beyond Talkeetna they are abundant, and same with the mergansers. And the reason that's important is because they -- they're the ones that depend on juvenile fish, not insects.

So I'm just wondering, you know, at what point those -- those species are added to your list

of observations, because I can't speak for the Upper River and how much -- how many kingfishers are up there because of accessibility, but at least in my neck of the woods they're -- they're prevalent and -- and thick.

MR. SCHICK: Yeah. Well, I would believe that. Again, this study was focused on the Upper River, and in those stretches the kingfishers were not abundant, but in the Middle River you have many more salmon resources and presumably a lot more juvenile salmon, probably more juvenile trout, and char, as well, so I could certainly imagine belted kingfishers being more abundant in that part of the river.

MR. LAWHEAD: Yeah. Mike, this is Brian Lawhead.

Let me clarify that the reason the belted kingfishers were dropped was specifically for -- as a target species for tissue sampling for mercury levels, because the concern for mercury was accumulation in the reservoir inundation zone, and there simply weren't enough there to warrant identification of that as a target species. Other species were identified as being better candidates for that sampling.

MR. WOOD: Thank you.

MR. LAWHEAD: Any other questions?

MR. GILBERT: Others, anything else?

Okay. I think that was a great presentation, very thorough.

Let's try to take a break now, and maybe we'll just go on our break until 10:20, twenty after the hour, and then we'll pick up again, because we have six studies to deal with the mammals and so on here before lunch, and we want to make sure we don't get too far behind. But we can go -- power into lunch if we have to.

MR. LAWHEAD: We'll make -- we'll make it up.

MR. GILBERT: We'll make it up.

Okay. So we're going to put you guys on mute. We're going to go on break, and we'll start up again at 20 after sharply. Please be back in the room for that. Thanks.

(Midday meeting recess)

MR. GILBERT: So we're going to start now into the mammals. And Mark Burch, you're going to start us off?

MR. BURCH: Yup.

MR. LAWHEAD: Yeah. Let me -- let me make

a few remarks here. The studies you've heard about so far were all done by ABR, but the next group is a mix of studies that were conducted solely by the Department of Fish and Game or in collaboration with ABR, and that will be clear as we go through them. But Mark is going to talk about the moose and caribou studies, and then there are some other people that will talk about other species.

Take it away.

Oh, one other thing I would like to say is if you haven't -- if you're attending the meeting here and you haven't signed up outside, please do so so that we can be sure to get your name spelled correctly and your affiliation.

MR. BURCH: As Brian pointed out, I'm presenting these for the principal investigator, Kim King Jones, who is unavailable at the moment.

MOOSE DISTRIBUTION, ABUNDANCE, MOVEMENTS, PRODUCTIVITY, AND SURVIVAL

(Study 10.5) - Mark Burch, ADF&G.

MR. BURCH: For the moose study, we did publish an SIR in November. And as far as the work that we have done, it's been based largely on collaring both bulls and cows that were collared in 2012 and 2013 for the purposes of monitoring their

movements, and that has allowed us to follow individual animals to look at distribution, movements, productivity, and survival.

We've also done some population assessment with using a geospatial population estimator throughout the whole study area in 2013, and we conducted several population surveys in the inundation -- the -- what you might think of as the greater inundation zone. It goes somewhat beyond the area that would actually be inundated. And those surveys were done in 2012, 2013, '15 and '16.

And then we did a complete browse survey throughout the study area in 2013 and have supplemented that with another survey along the inundation zone in the downstream area in 2016.

AEA implemented a variance to the study plan in 2015 in response to comments received in the ISR meeting in October of 2014. The concern expressed had to do with the potential effects in the downstream area from ice scour and things like that. And so the study did put a little more focus there and looking at regeneration of browse species.

I'm not going to dwell on the objectives. They've remained unchanged throughout the course of the study and have been reported previously.

In the status, I went through some of these components, the -- looking at the movement, the population monitoring, and some of the important work with the browse survey work that we've been able to do as part of the habitat assessment.

We did have a variance with the browse assessment in that we were not able to access all the CIRWG lands, but we believe that our sampling was sufficient that we were able to characterize the browse utilization throughout the study area. And in addition to that, we're supplementing the information on browse with a survey completed this year, in 2016.

Another variance was to suspend the monthly monitoring in the winter. We thought that we could do this because the movements were relatively small during the late winter months, and so we could still meet the objectives.

UNIDENTIFIED SPEAKER: You're kind of cutting out.

MR. BURCH: Okay. I'll try to --

MR. GILBERT: And somebody has got -- could they put their phone on mute? It sounds like wind or something that's coming through.

UNIDENTIFIED SPEAKER: Yeah, yeah, that's doing it.

MR. GILBERT: Yeah. That -- that will help.

UNIDENTIFIED SPEAKER: Could we repeat this last leg because of that wind interference, please.

MR. BURCH: Yeah. The point here -- and this figure on the left actually shows the ownership of the lands that were not accessible to us, and so that was a variance in that we were not able to access the CIRWG lands but we were still able to sample browse throughout the study area and meet the study objectives. And we also added this year a survey looking at browse in the inundation zone and then downstream from the dam.

And I also talked about the suspended monthly monitoring during the winter as a variance and extending the monitoring through this month, March of 2016.

In addition, as a result of some of the previous comments, we deployed 20 additional collars in the Middle River, added a third late winter inundation zone survey and conducted a late winter population survey along the Middle River.

I'm going to follow the lead of others and not present detailed results. But in this graph you can see some of the information, as far as the

collars that have been put out on bulls and cows, both VHF, which need to be flown in order to receive the telemetry and find the animals in GPS, which are -- give us more regular locations.

We've gotten some pretty good movement information that resulted in this current density analysis that shows the use at 50, 75 and 95 percent utilization.

We've been able to look at twinning rates and calf survival, which is another indicator of the habitat relative to the population of moose on the land in 2013 and 2014. We've also been able to look at calf weights on 15-month-old female calves and 15 -- ten-month-old female calves during captures.

This map indicates the locations where the browse study was actually conducted, and it was all done from helicopter. So you can see there's pretty good coverage throughout the entire study area, which includes the inundation zone, the downstream areas, the -- and the -- all the transmission corridors.

We conducted late winter moose surveys in the proposed inundation zone in 2012 and 2013, and we actually observed 427 moose in both of those years. You can see the survey -- the estimates that resulted from those observations.

And the way -- the reason that the numbers are adjusted somewhat is for -- based on the sightibility.

A GSPE was conducted in 2013. This is where we stratified the area based on the expected density of moose, whether it's high or medium low, and then conduct surveys in each of those grids. The map indicates the survey cell, the cells that were actually surveyed.

We've continued the telemetry using the GPS collars, and we expected to do that through this month, in March of 2016, and also conduct a second late winter survey in the middle Susitna River, and that has been completed, you know, not yet reported, of course.

So the steps to complete the study are reporting steps at this point and to continue the moose distribution, movements, and productivity, survival through this month, conduct a late winter inundation zone and downstream surveys, and then complete the fine scale browse surveys, as well.

I would be happy to hear any questions or comments.

MR. GILBERT: So questions for Mark on moose?

MS. LONG: I have a question, and should I go ahead?

MR. GILBERT: Sure.

MS. LONG: Or I have a comment.

This is Becky Long with the Susitna River Coalition. I just have a few comments.

The assessment of the habitat importance of the infrastructure corridor is a study objective, and this is really crucial because the existence of these corridors, you know, they have documented significant impacts on moose, and in fact, actually this can be applied to both -- to all -- to all the large carnivores, the caribou, the sheep, the wolverine, the bears and the wolves. Especially the Denali access route that goes up Deadman Creek will have the most serious impacts on wildlife. And there's, like, five significant impacts on moose and other large carnivores.

The direct development disturbance eliminates or changes habitats. There is behavior-avoidance reactions on the part of the animals that means further habitat loss. The results of habitat and population fragmentation can occur, you know, because of the existence of the corridors. Increasing an access means increased harvest and

disturbance. And then there can be direct mortality by collisions.

And my other -- another comment is that the ISR kind of treats the moose as one big study population, but in the 1988 studies they identified eleven different study populations that had different migratory behaviors, the extent of their migration and different habitat use, and they will be impacted by the impoundment in different ways. And all this is important when y'all do an impact assessment.

And I think -- oh, one question. Are you going to be able to do a moose browse assessment in the Cook Inlet Region Working Group lands?

Thank you.

MR. BURCH: To respond to the question, yes, we had permission to -- when we conducted the fine scale browse assessment -- to go on all the lands in that area, including the Cook Inlet Region Working Group lands.

MR. GILBERT: Any other questions for Mark on moose?

MS. LINGENFELTER: Yes.

UNIDENTIFIED SPEAKER: I have a --

MS. LINGENFELTER: (Indiscernible - simultaneous speech) from Ahtna.

UNIDENTIFIED SPEAKER: -- (indiscernible - simultaneous speech). Okay.

MS. LINGENFELTER: So on that one slide, it is mentioned that the winter surveys of the moose on the river corridor were suspended because there's little or no movement? River corridor is a very important area in the late winter, especially when the snows get really deep. Uplands moose tend to congregate down there.

I was wondering, were you able to collect any data with the GPS collars as far as how many moose were down using the river during high snow time?

MR. LAWHEAD: Can you just restate your name, and Mark will answer.

MS. LINGENFELTER: Okay. It's Heide Lingenfelter with Ahtna Incorporated.

MR. GILBERT: Thank you. Appreciate it.

Go ahead.

MR. BURCH: Yeah. I just want to clarify. I may have misstated that a little bit. The telemetry flights are throughout the study area for all the moose collared with the VHF collars.

And so that was what was -- the time in between those surveys was extended somewhat during

the wintertime. So it wasn't specific to the riparian area. And of course, we did -- we did several counts in the inundation zone and now downstream to look at the number of moose in those riparian areas.

It seemed like there was more to that question, though.

MS. McGREGOR: He (sic) was asking about the GPS collars.

MR. BURCH: Oh, yeah. Right.

The GPS collars, the data comes up and is -- through a satellite and is available to us. So we didn't lose anything as far as the GPS collar data.

Thank you for the reminder.

MR. LAWHEAD: Yeah. So the GPS collars work year-round, and it's really fine scale movement information, but that's on a small number of animals. That doesn't give you a population estimate, per se. that's why they did the actual population surveys in the inundation zone and in the downstream area. So we got both. You've got -- you've got fine scale movement information and population estimates, and that's why that late winter inundation zone survey was done, specifically to look at how many moose

might be using that area that would be flooded.

MR. BURCH: Okay. Good --

MS. LONG: A follow-up question from Becky Long.

MR. BURCH: Sure, Becky.

MS. LONG: I'm confused, probably because I'm not really smart or something. But before going out the VHF collared moose tracking in December, January, February and April, I -- could you explain that a little bit? Because that's like 62 percent of the collars, and I just wondered if -- you know, 62 percent of the collars, and is it -- wouldn't that kind of introduce the bias of underestimation of animal use because it's a much smaller sample to capture their range?

The 1988 Ballard and Whitmore study concluded that the lowest elevation lands near the Susitna River, which are the Cook Inlet Region Working Group lands, are the preferred -- are preferred by moose in the winter, and it -- it is true that those times are when the moose move less, but it is also the time of year when they are stressed by browse availability and other stresses. So I'm just kind of confused about that.

MR. BURCH: Yeah. I think riparian areas

are recognized as important for moose in the wintertime, and we have a pretty good handle on that based on the counts that we've done, as well as the browse assessment, specifically in the river corridor.

MS. McHENRY: This is Ruth McHenry with Copper Country Alliance.

In the course of your studies, did you observe any moose reactions to Air Force jets?

MR. BURCH: I'm not aware of any observations of reactions of moose in these studies to Air Force activity at all. It would be difficult with this study, though, to pick up on that kind of thing because we're observing moose for a very short period of time, only during a few counts that we did.

MR. WOOD: This is Mike Wood with Susitna River Coalition.

I just wondered when -- when you'll be taking the collars off the moose in the Middle River, what that time frame looks like.

They're starting to herd up now, and there were four in front of my house this morning, and one of them had a collar. I'm just wondering about when do they get to lose their hardware.

MR. BURCH: Well, depending on how you look

at it, that could well be one of the spinoff benefits of the work that AEA has funded with Fish and Game, is that we'll continue to use those collars to form our understanding of the population and the use of the habitat in the area.

As I mentioned, we can use it for -- use collars for twinning assessment, which is an indication of the quality of the habitat versus the number of moose on the -- on the ground. And so the Department of Fish and Game will continue to utilize those collars.

MR. WOOD: Thank you.

MR. GILBERT: Okay. Maybe we can go on to caribou.

MR. LAWHEAD: Yeah. If there are no further questions, we'll move on to Study 10.6, caribou. And Mark will also do that one.

MR. GILBERT: Okay. Maybe we can go on to caribou.

MR. LAWHEAD: Yeah, if there are no further questions, we'll move on to Study 10.6, caribou, and Mark will also do that one.

MR. BURCH: The question is whether I can find the presentation.

(Off-the-record discussion)

///

///

CARIBOU DISTRIBUTION, ABUNDANCE, MOVEMENTS, PRODUCTIVITY, AND SURVIVAL (Study 10.6) - Mark Burch

MR. BURCH: Again, I'm presenting this report for Kim King Jones, who is the principal investigator.

With the caribou study, we again collared bulls and cows, both, in 2012, and redeployed collars as necessary throughout the study. We documented distribution, movements, productivity, and survival through 2015.

One of the aspects of this study is to try to get a better handle on the migration and herd delineation of caribou using the area. And we tended to think of them as the eastern migratory group and the western group when we were deploying the collars and doing the analysis to -- to date. As we move forward, we may end up learning things that cause us to look at those things differently, but that's how we're doing it.

Again, the objectives have been consistent throughout the time period of the study. I'm not going to read all these to you, but...

Again, this -- with caribou, the deploying collars, both VHF and GPS, was very important for the monitoring of the movements, and most of that information has been reported in previous ISRs.

Technically we have a variance in the way that we've referred to the components of the herd. Looking at, as I mentioned, rather than the Nelchina and the Deltas, looking at western -- the western group and the eastern migratory group. But most movement data will actually be used to determine the herd designations.

We conducted calving surveys, May 25th through June in 2013 through the fifth -- 2015. And this allowed us to look at productivity, and then early calf survival.

This again is a table of results. I'm not going to present the details of the results, but you can see the numbers of both bulls and cows that were collared with VHF and GPS collars.

Again, we've been able to do some kernel density graphics to indicate at the 50, 75 and 95 percent utilization distribution contours.

This map is for the GPS collars. And, of course, the previous one here is for the VHF collars. So you can see the GPS collars could provide finer

scale movement information, but they -- it's -- with more regular reporting, which is helpful, over a broader range.

We had modifications proposed in Part C of the ISR and implemented those in 2013 and carried forward to 2015.

You can see there was some variation in migration patterns from year to year, which is not unusual for caribou, and so it was helpful that we had a -- more than one year of migration data there.

The steps to complete the study are to write the SCR, the Study Completion Report. We have quite a bit of data analysis to finish up, and the -- to look at the distribution movements of both cows and bulls from those two different groups, the western group and the eastern migratory group.

Are there any questions or comments?

MS. LONG: This is Becky Long from SRC.

Can I make comments?

MR. GILBERT: Yes.

MR. BURCH: Sure.

MS. LONG: Okay. I have four basic comments, and some of it is -- I just want to get in the public record.

The first one is the ISR study, you know,

as you said, divides the herds into eastern and western migratory groups. But I think there needs to be a -- to be identification of the small Chulitna Hills group, which is likely to be impacted most by the project, especially if the Denali West option is chosen. Also, there is a small herd that is centered around Cantwell, and it will also be affected by the Denali West option.

The proposed dam project is only one development effort that may occur on the Nelchina caribou range. Other human intrusion efforts need to be considered for their cumulative impacts. And I guess that would be in the draft licensing and in the NEPA process, but I would like to get them in the public record.

We have the mineral exploration drilling project that -- &G Mineral Exploration (ph) has done exploratory drilling on land south of the Susitna River, drilling rock core samples, and they have been doing this in the northern part of the traditional Nelchina herd calving area. The Talkeetna Mountain calving grounds are considered the most important single geographic area to the herd.

We have the joint Pacific Alaska Range Complex, or JPARC. The fox 3 and Paxton military

operation areas called MOAs. The fox 3 MOA expansion and the Paxton MOA addition are well-defined actions for the JPARC master plan by the Air Force. This means vertical and horizontal airspace of 500 feet to 5,000 feet will be used for training exercises. Subsonic noise level, fox 3 is up to 50 dB's, for the Paxton be up to 54 dB's. The average number of sonic booms per training day could be 5.2. The emissions and pollution from chaff and flare use are a consideration.

And local ecological knowledge and from hunters has said that the -- that the caribou herds are more fractured lately, whereas in the tier two hunting days hunters would see bands of caribous, but now they often see single caribou, and they looked panicked.

The hunting pressure is overwhelming. The use of ATV vehicles penetrate further into the remote areas. The gravel pit at the Susitna River drains on the Denali highway. It's -- during hunting season there's mass motor homes, campers and ATVs, testifying to the large amounts of people in the area. According to the local hunters, the Nelchina caribou herd has hunting pressure like never before. The general area around and adjacent to both the

Denali East and Denali West has been characterized as a war zone.

Another comment is that the 2011 Schwanke caribou survey and inventory report stated that large numbers of Nelchina herds have spent late summer and winter in the Watana Creek area in recent years. A major concern is that females trying to cross the impoundment area during the spring migration to calving ground, that's a major concern.

I made reference to the well-known incident in the Quebec Labrador Peninsula area in September, 1984, of the death of 10,000 caribou. The exact cause of the death is unknown, but the filling of the reservoir on the Caniapiscau River from 1981 to '84 was thought to be involved.

It's important to provide data for the impact assessment that showed caribou made wide-ranging migrations that can shift after a few decades because of changes in the rain conditions, the deterioration in the rain conditions.

For instance, in the 1968 study, they show that the impoundment area in the Chulitna Mountains north were more heavily used by the Nelchina than was shown in the 1987 study. But in recent years they're using impoundment area in the northern part of the

project area. So project infrastructure and reservoir directly will be, you know, encountered by them.

I guess just -- just to sum up, to say caribou need large areas in which to survive in large herds.

MR. GILBERT: Okay. Thanks for that input.

Let's keep moving if we can. Other questions about the study for caribou for Mark?

MS. McCRACKEN: I have a question.

This is Betsy with Fish and Wildlife Service. And I'm just wondering if the study is looking at all, or integrating at all with the -- with the climate change or the ice processes studies related to the reservoir and the caribou migration.

MR. GILBERT: So Betsy is asking about the relationship from Fish and Wildlife Service, relationship of this study to the climate change aspect.

MS. McCRACKEN: If it at all had been --

MR. BURCH: I wouldn't --

MS. McCRACKEN: -- (indiscernible - simultaneous speech).

MR. BURCH: I wouldn't say there is a direct connection. I mean, climate change could

affect everything, so...

MS. McCRACKEN: Right.

MR. BURCH: But we're not -- we don't have a specific objective or anything that relates to climate change.

MS. McCRACKEN: Okay.

MR. BURCH: I think the ice survey, which it's my understanding is mostly downstream of the inundation zone, may be informative. And then we've thought of it, and especially in terms of its connections to the moose study more so probably than caribou, but they could both come into play.

MS. McCRACKEN: I didn't get a good look at the pathway slide to see if -- you know, where that was in relation to the -- like, where is it?

MR. BURCH: It's pretty --

MS. McCRACKEN: Is the -- where is the reservoir there?

MR. BURCH: Reservoir would be right there.

MS. McCRACKEN: Oh, yeah.

MR. BURCH: The blue here.

MS. McCRACKEN: Okay. I see it.

MR. BURCH: Yeah.

MS. McCRACKEN: Okay. Okay, great. Thank you.

MS. McGREGOR: I just want to clarify something Mark said. The ice processes study looks at ice processes below the dam, but the EFDC model in the water quality study is where they're going to model ice processes within the reservoir, and that will be taken into account in the impact assessment in trying to look at the effects on caribou.

MS. McCRACKEN: Okay.

MR. GILBERT: Okay. If there's no more on caribou, let's shift gears to the Dall's sheep, which will be --

MS. LINGENFELTER: I have one last question about the study. I have not been able to find where it is posted on the website.

MR. LAWHEAD: There was no study implementation report done for this, so it's the ISR -- I don't think we can go back -- oh, here. Okay. If we can go back to the listing, the status slide.

So the reports that have been done so far on this were the initial study report in June of 2014 and then this PowerPoint. There was no study implementation report done on this study because it's --

MS. LINGENFELTER: Do you have a projected

date when it will be completed?

MR. LAWHEAD: Later this year. I don't know the...

MR. BURCH: By July 1st.

MR. LAWHEAD: Did you hear that? It was by July 1st it's scheduled.

MS. LINGENFELTER: Thank you.

MR. LAWHEAD: Yes.

And that -- was that Heide?

MS. LINGENFELTER: Yes, it was.

MR. LAWHEAD: Okay.

MR. GILBERT: Okay. We'll go to the Dall's sheep, which is a study completion report.

MR. LAWHEAD: Okay. Writing -- writing notes, but I'm also supposed to be talking.

This Study 10.7 was one of the studies that was done collaboratively by Department of Fish and Game and by ABR. I'll start off on it, and Alex Prichard will talk about it. And if we have questions about Fish and Game's aspect of it, they can put Mark on the spot again.

DALL'S SHEEP DISTRIBUTION AND ABUNDANCE

(Study 10.7) - Alex Prichard, ABR

MR. LAWHEAD: Okay. This is not a very involved study, a fairly simple work that was done

over a period of two years. Or three years, actually. The study report, the initial study report was filed in June 2014, and the study completion report was filed in November 2015. The study is considered to be complete. Based on two years of observations at mineral licks in the -- in the study area north of the reservoir inundation zone, two years of aerial surveys of populations in the mountains in the area, and an analysis of historical data.

The objectives are fairly simple. Looking at population size, that was based on the aerial surveys, and also the delineation of summer range was drawn from the aerial surveys. And then the mineral lick work was done through direct observations and camera monitoring on the ground.

So the conditions in 2014 were not suitable for aerial surveys because of persistent snow cover into the summer. So the second year of surveys was done in 2015. The first year of surveys was done in 2013.

The intention was to survey the entire study area, but due to a little human error, a small block of the study area was missed in the 2015 survey, and it's shown on the -- on the maps that

we'll look at in a moment.

The other variance was that the initial study plan did not call for the use of time-lapse cameras, but we wanted to try and get a little bit more information over a longer time period during the time of the year when the historical observations suggested use of the mineral licks peaked, so we deployed a time-lapse camera at the Jay Creek lick in 2013 and 2014.

I won't go into too much detail here.

You know, there were -- there were three areas of concentration found. Most of the sheep were West or south of the proposed inundation zone. The smallest number was found in the mountains just on the north of the inundation zone, which is where the two licks are located. The licks were observed in May and June of 2013 and 2014. Not many sheep were seen at either lick in 2013, and even fewer in 2014. This is lower numbers than were seen in the '80s, but the number of sheep using the area is also lower than in the 1980s.

So you can see here the -- here's the reservation -- reservoir inundation zone, and this is the Watana Creek Hills area. This is where there were about 41 sheep found in 2013, or seen in 2013.

This is the West Kosina Hills. It's the second largest number. Then the largest numbers were up here in the -- in the Chulitna Mountains.

And the licks, mineral licks are here, the Jay Creek lick and the Watana Creek lick. And during a course of observation in 2013, we also saw a small lick across the valley from Watana Creek lick.

This is a density map, contour map, showing the summarized results of the 2013 aerial surveys. You can see the densest populations are to the northwest and south of the reservoir zone, with the fewest numbers in the Watana Creek Hills.

And this is a simple graph. This was showing the time-lapse camera results from two zero up to five sheep in that month-long period or three-week period in 2013.

2014, we only did the mineral lick work again. Again, the aerial surveys couldn't be completed that year due to persistent snow. And so nine sheep at the Watana lick, none at the Jay Creek lick, but on the time-lapse cameras only three sheep were seen at a time on any given day in the -- in the period of time-lapse camera monitoring.

In 2015, late July, early August, the aerial, second aerial survey was done, and a bit

fewer sheep were seen. About ten percent fewer sheep were observed. And the number in the Watana Creek Hills was a little bit lower even than -- than two years before.

Again, not many sheep -- fewer sheep seen and less activity at the Jay Creek lick in 2014.

The basic pattern of results from 2015 was similar to 2013 in terms of the -- the distribution of sheep densities observed on those surveys.

So no modifications are proposed going forward because this study is complete.

And we'll take any questions or comments.

MR. GILBERT: Questions?

MR. RYCHENER: Tyler Rychener with Louis Berger, contractor for FERC. I just have a quick question.

The time-lapse camera for the mineral lick at Jay Creek, I think you had a sample picture up in the presentation. Was that before or after the camera was knocked? I think there was something in the report about it being knocked out of place by a bear or something one day after it was --

MR. LAWHEAD: Yeah. Well, it was --

MR. RYCHENER: -- (indiscernible - simultaneous speech).

MR. LAWHEAD: -- not one day but it was -- it was sort of modified twice by a bear.

MR. RYCHENER: Okay.

MR. LAWHEAD: But it didn't get knocked off, just tilted, so the observer had to...

MR. RYCHENER: Oh, okay. So it wasn't just, like, shifted to a different view or anything?

MR. LAWHEAD: No.

MR. RYCHENER: Okay.

MR. LAWHEAD: No, you could still see the lick but...

MR. RYCHENER: Okay. Thanks.

MR. LAWHEAD: It was just disturbing to look at.

The second year it didn't -- nothing messed with it. We put the camera in the same place, not having learned our lesson apparently.

Okay. Any other comments or questions?

MS. LONG: Yes. This is Becky Long again.

I just think it's important to note that the Denali route will go through the sheep range. And as you guys said in the Study Completion Report that there's been a general decline in sheep numbers, which you all postulated is due to severe winters, and I think it's really interesting.

I saw in the ADN that the Anchorage Fish and Game Advisory Committee are meeting on April 5th to discuss research on the declining population of Dall's sheep in Southcentral. The numbers in Chugach State Park and the northern Chugach Mountains are down from about half of the population from 25 years ago.

And I just wonder, could you offer up some reason? Is the severe winter reason that you guys said in the study what you're thinking? Or do you have any other ideas why the numbers are less?

MR. LAWHEAD: I'm pointing -- pointing at Mark.

MR. BURCH: I can talk about it for a minute and a half. And that is that, for one thing, sheep die from a lot of different causes, and -- and sometimes they're not, of course, even born because of lack of pregnancy. So productivity is important, cause of death is important, and those things vary greatly from year to year and from range to range. And so the bottom line is it's really hard to speculate, unless we're doing a concerted study at the time to document, A, that there was an actual decline in the sheep population. Which I wouldn't even necessarily say that just from two counts that

were out there. They're indices of the population but they're not an exact count of every sheep that's out there.

Unfortunately there are sightibility difficulties and things like that. So the first thing is whether there's been a decline, and the second thing would be what could cause it. And some of the studies in some areas show a tremendous number of different causes of death; everything from avalanches to various predators; and icing can be a problem for sheep, but it's pretty hard to say definitively what the cause of a specific decline might be unless you're out there observing it at the time.

MR. LAWHEAD: Yeah.

And Becky, this is Brian again. As you're probably aware, the ISR went into some detail on the historical surveys, and I think it had a good summary of the historical counts there. But you're right, the population does appear to have declined over time.

MS. LONG: Thank you.

MR. LAWHEAD: Okay. Any other questions or comments before we move on?

All right. Hearing none, we'll move on to

Study 10.9, which will be discussed by Kevin Colson of the Department of Fish and Game.

Take a moment to get the talk set up.

WOLVERINE DISTRIBUTION, ABUNDANCE, AND HABITAT OCCUPANCY

(Study 10.9) - Kevin Colson, ADF&G

MR. COLSON: Just to review, the wolverines -- the wolverine study submitted an ISR in June 2014, and we have submitted our SCR in November of 2015. The study at this point is essentially complete.

Here are the objectives again. You've seen this before at the previous ISR meeting.

The components to address those objectives include the conduction of a SUPE and occupancy model survey -- occupancy surveys, occupancy modeling, and then an analysis of their habitat, occurrence and distribution.

There were two variances in this, the first being that the study area had to be modified for purposes of the SUPE. This is partially due to violations of survey conditions, especially in the southern portion of the study area. But in the northern portion of the study area, those areas had to be removed because they posed a hazard to

navigation. However, despite these, we were able to complete the SUPE survey, and one of the largest ones to date.

We did not perform multiseason occupancy modeling. Recent research has brought to light the fact that occupancy modeling requires far more sessions and more survey effort than was previously appreciated in order to index changes in population abundance with any real statistical power. Occupancy modeling was abandoned in favor of the SUPE, which gives you true abundance as opposed to an index of abundance.

Our accomplishments. We conducted the SUPE in 2015; we produced a density estimate for the area; the adjusted lower limit -- worth explaining for a moment there. That is the minimum number of wolverines seen. However, since you could see that some of the tracks extend outside of the study area, then those -- the number of wolverines was weighted by how much of the track was inside versus outside of the study area.

Wolverines were widely distributed throughout the study area. We examined habitat associations and found it similar to those observed in the previous work by Ballard. In general, they --

they occurred more in forested habitat than in open habitat.

We supplemented the track data -- track data from the SUPE survey with findings from 10.10, the terrestrial furbearer report. This provided a longer term view of a smaller area, whereas the SUPE provided data on a larger area but a snapshot in time.

There are no modifications for the study, as the study is complete.

And the study is complete.

MR. LAWHEAD: This is Brian. I just wanted to -- a little point of information. The reason it took several years to get the SUPE done was because it requires the occurrence of suitable snow conditions, tracking conditions. So it's not a slam dunk that you can do it in any given year. In fact, it took three years to get it done.

MR. COLSON: Correct.

MR. LAWHEAD: Any questions or comments?

MS. LONG: This is Becky again. Sorry to bother you guys, but I just wanted to -- so was it 2014 that there wasn't the snow cover up there? I'm just curious.

MR. COLSON: In both 2013 and 2014, the

period in which you would want to be doing a SUPE didn't have sufficient snow cover.

The SUPEs require both -- a particular amount of snow to cover the low vegetation to allow you to detect the tracks with high probability; in addition, afterwards you need an additional dusting of snow to cover up old tracks. So this is a very specific pattern, weather pattern. So even in high snow years you might not achieve it. However, in 2014 we were able to get the sufficient snow pack and then the subsequent covering.

MS. McGREGOR: In 2015?

MR. COLSON: 2015, I beg your pardon.

MR. LAWHEAD: Right. So it requires a fresh snowfall, and then you do the survey in the period in the days just immediately following the fresh snowfall. And conditions in 2014 were difficult for the -- for the tracking.

You know, this requires a -- how many airplanes did you use?

MR. COLSON: A very large number. Eight, I believe, or seven.

MR. LAWHEAD: Yeah. So you have to have snow cover over the entire area, and you've got to have just kind of the perfect conditions, and they

seldom occur.

MR. COLSON: And a small fleet of aircraft.

MS. McGREGOR: And biologists.

UNIDENTIFIED SPEAKER: Right. A fleet of them, too.

UNIDENTIFIED SPEAKER: And wolverines.

MS. McGREGOR: Yes, and wolverines.

MS. LONG: And just a -- just a quick follow-up is -- so you said that your findings confirm with the findings from the 1980s studies?

MR. COLSON: Yes, both in terms of the elevational distribution of wolverine occurrence; so what elevations the wolverines were using during that late -- mid, late winter period, and also in what habitats tracks were occurring in.

MS. LONG: The '80s, they actually radio collared wolverines?

MR. COLSON: Correct.

MS. LONG: Thank you.

MR. GILBERT: Any other...

MR. WOOD: This is Mike. Mike, the Susitna River Coalition.

Just -- just observation is over the last few years there seems to be a larger number of tracks out there, especially this year, and observations.

So does that correspond to what you guys were seeing?

MR. COLSON: Correct. The -- there is no previous wolverine density estimate for that area. There is a density estimate for an area further south that has more trapping effort. So it's a difficult comparison to make there. But despite that, this is -- we estimated a very large number of wolverines.

MR. WOOD: Thank you.

MR. LAWHEAD: Any other comments or questions?

All right. Hearing none, we'll move on to Study 10.17, which will be presented by Rick Merizon of ADF&G from Palmer.

POPULATION ECOLOGY OF WILLOW PTARMIGAN IN GAME MANAGEMENT UNIT 13 (Study 10.17) - Rick Merizon

MR. MERIZON: So, yeah, again, I'm Rick Merizon with Fish and Game, a small game biologist based in Palmer, and I'll be presenting the latest on Study 10.17, willow ptarmigan.

So the -- we have completed the ISR, but we have not completed an SIR or SCR for this project. We still have -- we're still completing aerial surveys, aerial telemetry surveys for this project,

although all the fieldwork is done.

Beginning back in the spring of 2013 and late summer for 2013, 2014, 2015, we applied VHF radio necklace collars on willow ptarmigan. We also completed aerial transect surveys, and then monthly aerial telemetry surveys to locate those collared birds.

The objectives have been unchanged, and much like previous presentations, I'll just breeze over this, save a little bit of time.

We do have a couple variances I just wanted to point out. As we've heard several times today, the spring of 2013 was very problematic for sciences trying to get out in the field. We had very late snow melt, very persistent snow pack, and as a result we deployed fewer radio tags in the spring of 2013. We also, as a result of that, were unable to visit several of our proposed capture sites. We did, however, add the Denali Highway capture location.

We also admittedly -- see my Achilles heel here. We -- this was a relatively new concept for Fish and Game in terms of trying to capture radio-collared ptarmigans, so we went into the study knowing that several methods would work, but we also discovered that mist nets proved to be very

successful after talking to some colleagues in Scandinavia, and we added that as a variance, as well, to the project.

The aerial transect flights were not completed in March of 2013, and we moved the September 2013 transect flight to actually January of 2014, and that was largely the result of snow cover.

We don't have any major results to report, other than just our summary statistics, and that is that we've deployed approximate -- well, we've deployed 243 radio collars to date. All of our collared deployments are complete as of August of 2015, this year. We deployed them both on breeding male and female willow ptarmigan, as well -- as well as juvenile male and female willow ptarmigan in August at five different capture locations.

The January -- the transect flights, aerial survey -- or excuse me, the transect flights in January 2014 and March of 2014, we observed exceedingly few flushes. In fact, so few that -- this is a great segue into our modifications. For our models to work, we need far more flushing observations than we had at both -- during both of these events.

So I will jump right into the

modifications, and specifically about our aerial transect flights. We decide -- because of the -- the lack of observations as a result of our flushing technique, we decided to cancel that portion of our project and instead allocated those resources into our aerial telemetry surveys, which would boost our movement and mortality models.

We also added Butte Creek and Deadman Lake as additional capture sites in 2014.

In terms of the progress since the ISR, as I said, we've completed all of our capture work as of August of 2015. We did recapture and recollar some birds that had previously been on the air for other -- in 2013 and 2014, and we -- we improved considerably each year with our capture abilities. I think we caught about 41 birds in 2013, 90 in 2014, and 117 in 2015. So we improved our technique considerably and as a result were able to meet the collaring objectives for the last two years.

As far as steps to complete the project, as I said, all of our capture data -- all of our capture fieldwork is done. We're completing aerial transect surveys this month, April and May of 2016, and then all fieldwork will cease and we'll begin analyzing the telemetry data. We actually have already begun.

I should mention, too, we've got a graduate student at the University of Alaska-Fairbanks who's taking the lead on the data analysis right now. So we'll get into that 100 percent here shortly.

So that's -- that's the update. I'm happy to take any questions.

MR. GILBERT: Questions for Rick on ptarmigan?

UNIDENTIFIED SPEAKER: None?

MR. MERIZON: Everybody is ready for lunch.

MR. GILBERT: No questions? Okay.

MR. LAWHEAD: Rick's disappointed.

MR. MERIZON: No, I'm not. No, I'm not.

MR. GILBERT: Must be going good.

MR. WOOD: You want a comment? I can give you one. This is Mike.

Deadman Creek, I'm glad you added that. It's -- there are a lot of ptarmigan out there.

MR. LAWHEAD: A high five for Rick.

UNIDENTIFIED SPEAKER: High five.

MR. GILBERT: Okay. We'll go to 10.10, furbearers.

TERRESTRIAL FURBEARER ABUNDANCE AND HABITAT USE (Study 10.10) - Brian Lawhead, Alex Prichard

MR. LAWHEAD: This study was done by some folks at the Institute of Arctic Biology at the University of Alaska in Fairbanks. It's a graduate master's program, and he has since graduated, and the professor has moved to the University of Washington, so I get to present the talk.

Between me and Alex Prichard and Kevin Colson, I think we can handle the questions, but if there are questions or comments that we are unable to address, we can -- I'm pretty sure that Laura, Laura Prugh would still be happy to provide us with information for any further needs.

Again, like the others, this is a Study Completion Report, and like the other Study Completion Reports it was filed in November. Previous initial study report was -- was filed in June 2014.

Data collection was completed in 2014, so it was two winter seasons of work, January to April in 2013 and 2014 for the actual furbearer work, and then in the summer of 2013 and 2014 -- and actually a little bit in 2012, there was some prey abundance monitoring.

The genetic analyses were completed in 2015, before the Study Completion Report was done,

and that's also when spatially explicit furbearer estimates were generated and occupancy modeling.

The objectives were to look at four species, coyotes, red foxes, lynx and marten, and try to develop population estimates, and then to assess the general abundance of prey species in the area, and to look at habitat use information.

The work consisted of sample collection in the winter of scat and hair samples. And basically these were done along transects, trail transects established in the study area. It was done by snow machine. And then the DNA analysis was done on -- on the hairs and scat.

Habitat use was based on aerial track surveys, and then also from some of the tracking, ground tracking surveys in winter.

And then the genetic information was to be used for capture, mark, re-sighting analysis.

Several problems that were related mainly to access to the area, not just a lack of access to Cook Inlet Region Working Group lands in 2013, but in general the difficulty of ground access to all parts of this very large study area.

The first winter's work was based at Alpine Creek Lodge on the Denali Highway, and so most of the

activity, just from a logistical standpoint, had to be conducted in sort of the eastern half -- northeastern portion of the study area.

In neither year was it feasible to do studies or surveys in the Chulitna or Gold Creek corridors because of these limitations on access. And then the Chulitna Corridor was eliminated anyway.

In the second winter, the survey area was expanded somewhat by moving the -- moving the base camp, which allowed a little bit better access down into the central part of the study area. However, it still wasn't really feasible to get, you know, down into the canyon or south of the river by snow machine.

The hair snags used for -- to obtain lynx hairs were modified somewhat during the course of the study, and -- and also they added backtracking to try and increase the number of hair samples collected.

And then the -- the prey sampling grid design was altered a little bit to try and better cover the habitats in the area, and also the level of effort expended in the vole trapping surveys was shortened. So a larger number of sites could be sampled with less effort, so -- because of the size of the study area. And then the vole trapping

results were indexed to a longer term study in Denali Park, which provided good background information to -- to be able to come up with some estimates of vole densities.

Some other methods were added after the study plan was finalized and accepted mainly relating to the occupancy modeling. They tried using motion-sensing cameras in the occupancy surveys, but they didn't pan out very well, so that was dropped in 2014.

I won't go into this in great detail, but base -- the basic take-home is that the sample collection improved in the second year, both for scats and hairs.

Again, I won't go into too much detail here. The take-home is that in 2013 the number of hares and voles was lower than in 2014, although hare abundance was pretty variable across the study area.

These aerial track surveys were conducted in winter 2013 and 2014 on transects that were established in the 1980s. They were only -- they were only followed once in 1980, in November, but we felt it was important to try and, you know, retain that method for comparison with the historical information. So these were performed by Laura Prugh

on each survey.

Again here, the poor snow conditions, only two surveys were conducted in the winter of 2014, and one of those the conditions weren't very good.

She did, however, detect quite a few tracks and was able to compile those by transect numbers. So proceeding from -- from left to right is kind of going upstream on the Susitna, and you'll see that the number of marten decreased a bit in the upper stretches, and the number of lynx increased, and then we were able to get habitat, general habitat information from those transects.

I don't know if you remember the numbers from -- well, here it is. It's got both years on it. You can see the number of scat collected in 2013 was about 138, and that more than doubled in 2014. The number of scat that were successfully gene typed from the DNA analysis was pretty good for red fox and coyotes. In general the DNA results for lynx and marten were very disappointing, and they didn't pan out very well. So the objectives to try and estimate population densities for lynx and marten could not be achieved for that reason.

Wow, a very busy table. But if you -- if you study this, you can see that the vole densities

went up quite a bit in 2014, and hare densities average -- actually, looks a little bit lower overall in 2014. I mean, this whole study was conducted during a low in the -- in the hare cycle, and even from the 1980s, the information from the studies that were done at that time sort of indicated that hares were not particularly abundant in the study area.

The results of the ground-based track surveys were used to conduct occupancy modeling, occupancy probabilities were calculated. This is sort of a relative index of abundance -- or, probability, rather.

Occupancy was compared among different habitat types; and as expected, lynx and marten tend to be more abundant in forest habitats.

Again, the statistical results for population estimation could only be followed through completely for the coyotes and red foxes because of the DNA results. But the red foxes turned out to be about four times more abundant than coyotes.

Yeah. Actually the corridor is actually a variance because it was eliminated and the work done, but no surprise there.

So the study is complete. And we'll take any comments and questions.

MS. McHENRY: This is Ruth McHenry, Copper Country Alliance.

I just had a question about whether you know if trapping was looked at in -- in this study area or not.

MR. LAWHEAD: One of the other studies in this -- in this program is a -- is designed to look at harvest information, harvest analyses, based on reported trapping results. Now, not all of these species need to be reported to Fish and Game, they don't need to be sealed -- what -- help me out here -- marten do? No? Marten don't? Lynx do?

UNIDENTIFIED SPEAKER: Otters do.

MR. LAWHEAD: Otters do.

Anyway, there was no specific monitoring of trapline occurrence or distribution in this area. In general the area is lightly trapped. In fact, the first year the grad student was working with the -- one of the residents of the northern part of the area who was actually a trapper in the area, but I don't think he was trapping that year. At least I hope he wasn't for the sake of Casey's study (ph).

I don't know.

Betsy, in any of the other studies, are they -- have they been mapping traplines or anything

like that at all?

MS. McGREGOR: Well, there's the subsistence study, so they do look at anything that was harvested from a subsistence perspective. There's the recreational study, and they look at any of that -- those types of activities from that perspective, as well.

MR. LAWHEAD: Right.

So it's more of a, I think, a general assessment than, you know, specific -- oh, I mean, trap -- information on traplines and trapping effort is protected under state regulations. I mean, that's information that is not generally available. But the general idea of being able to get a handle on how much trapping occurs in the area has been recognized as being of importance in several studies on trying to get an idea of how many animals are trapped in the area. But in general, compared to certain other areas, I can tell you that the trapping pressure in this area is pretty -- pretty light, at least away from the Denali Highway.

MR. WOOD: This is Mike Wood.

(Indiscernible - telephonic interference.)

MR. LAWHEAD: Yes. Go ahead.

MR. WOOD: A couple of questions. One is:

Were you able to access the area between Devils Canyon and the Oshetna River to study those animals for traps or whatnot?

MR. LAWHEAD: So you mean in general on either side of the river or you mean on the south side of the river?

MR. WOOD: Yeah. Yeah. In Devils Canyon and all the way up to the Oshetna River, that whole river corridor, were you able to access that? I know that it's private property because of CIRWG, but were you physically able to get down there to make observations?

MR. LAWHEAD: Not on -- not on the ground. The ground activity was sort of limited to the area from, like the area, southern part of the Denali Corridor and upstream. But the aerial track transect surveys did cover the entire -- that entire stretch, yes.

MR. WOOD: Okay. It's really difficult to get down to that river corridor, so I understand your -- your problems.

Historically, there was trapping out at Stephan, and the populations were quite -- quite good in that lower valley there. Although I agree with you, I don't know anybody currently trapping down

there. But it's -- it is excellent habitat.

MR. LAWHEAD: Right.

MR. GILBERT: Anything for Brian?

MR. LAWHEAD: No other questions? If not, we need to discuss what we're going to do here.

I don't know -- Becky or Mike, do you know, is Sterling Miller planning to participate for the large carnivore study this afternoon?

MR. WOOD: This is Mike. That's another -- maybe a question for another person, as well. But we -- Sterling Miller has been consulted on this, and we plan on submitting written comments in June from Sterling. I'm not sure he will be there in person today.

MR. LAWHEAD: Okay. The reason I ask is because if he isn't, then we could potentially move on to the large carnivore study now. I know that Todd Mabee is in Oregon, and he's planning to join us after lunch. So I would rather not do any of the talks that he's involved in.

The other thing we could do, staying on the furbearer theme, is to jump to the aquatic furbearer study.

Alex, are you on the line?

MR. PRICHARD: Yes, I am.

MR. LAWHEAD: Okay. If -- if that's okay with everybody, we can move the aquatic furbearer talk up ahead of lunch and get one more in, at least.

MR. GILBERT: Sure. That sounds good, because it's -- we have time, if we can do that.

MR. PRICHARD: Great.

MR. GILBERT: Let's do one more.

MR. LAWHEAD: Uh-oh, I'm on my own here.

MR. GILBERT: You can do it.

MR. LAWHEAD: I can do it.

Bear with me.

MR. GILBERT: So you're doing 10.11.

MR. LAWHEAD: 10.11, yes.

Look at that; it might even work.

We are good.

(Off-the-record discussion)

MR. LAWHEAD: All right. The next study, then, we'll jump to is 10.11, aquatic furbearers. And I'm tired of talking, so I'll let Alex Prichard of our Fairbanks office present this one. This is a study that's been done entirely by ABR.

All right. Take it away, Alex.

AQUATIC FURBEARER ABUNDANCE AND HABITAT USE (Study 10.11) - Alex Prichard

MR. PRICHARD: Okay. There might be a

slight delay in the -- when I see the slides up here.

MR. LAWHEAD: Don't talk too fast.

(Off-the-record discussion)

MR. PRICHARD: Okay. The status of the initial study report was filed in June 2014, and then we filed the study implementation report in November 2015.

We have completed the beaver lodge portion of the study, which was two years of surveys, and we've done one year of track surveys for river otter and mink. The second year is this winter. And then we're planning to do a muskrat pushup survey this spring.

So the next slide.

The objectives. I'll just go through them really quickly. Delineate the distribution of beaver lodges; describe the distribution and relative abundance of river otter, mink, and muskrats; look at habitat associations; review available information on food habits and diets of piscivorous furbearers, and that's for the pathways analysis and mercury assessments; and then also, collect hair samples of river otter and mink for -- again, for that study. And both those components have been moved to Study 5.7.

So going on to the next slide.

And so the study components. Looking at beaver and muskrat lodges and pushups from aerial surveys; looking at river otter and mink use from winter track surveys; and then, the mercury assessment, which, as I said, was moved to Study 5.7.

And the variances. So the aerial survey area for beaver was increased slightly. We included some -- some areas. The lower study area, to increase the survey area a little bit. So we collected more data for that, the point of the study.

And then the planned survey of muskrat pushups wasn't conducted in 2013 because of spring conditions, or in 2014, but we did get some information from other researchers working in that area on other study components, and we conducted incidental observations of muskrat pushups and river otter and mink tracks and animal locations.

And then track surveys for river otter and mink were not conducted in February and early April 2013 or in November or December 2013 due to the lack of a suitable weather window, aircraft pilot availability, though we've got quite a few incidental observations from other studies.

And then again the Chulitna Corridor was

dropped from the study and the Denali East option was added. And the mercury analysis component was moved to Study 5.7.

Okay. Just a brief overview of the results. So we did complete two years of surveys of beaver lodges, and in early October there were 184 observed beaver colonies. We looked at how many were active and then how many survived over the winter. And then we compiled incidental observations of river otter -- river otter and river otter tracks and muskrat pushups that first year.

Looked at a review of scientific literature.

And that was, again, moved to Study 5.7.

So I'll show -- the next slide is a map of first year beaver lodge locations. As expected, they were widely distributed around the study area. The red are active beaver colonies; yellow are inactive beaver colonies. And I'll just continue on through here.

The next slide is incidental observations of river otter, mink tracks and muskrat and muskrat pushups. And again, it's expected that river otters were widely distributed, especially on riverine areas. Most of the the muskrat observations that we

saw were in Fog -- Fog Lakes area.

Okay. Summary of results since the ISR. We have completed three track surveys for river otter tracks and mink tracks in 2014; and we recently completed another one this winter.

An aerial survey was conducted on May 2nd, looking at survival beaver lodges. The first survey was -- we only had -- we had a low survival estimate, but that was probably affected by poor conditions during the survey. We conducted a second fall survey of beaver lodges and found a total of 250 lodges, including 82 that were active. And then we looked at survival over the next winter of those who had a higher survival rate.

And we compiled more incidental observations of river otters and river otter tracks, muskrat pushups. We tried getting some river otter hair snares. We only were able to collect four hair samples. But that component is in Study 5.7 now.

Okay. And this shows some results in the river otter aerial, river otter/mink track aerial surveys. It just shows you where some of the river otter tracks were and where we are seeing tracks. They're mostly along the riverine areas. We surveyed all the corridors and then the reservoir area and

tributary streams to the Susitna, and then we did transect over the reservoir area. Most of the tracks were along the streams, but we did see some in Alpine areas, too, all Alpine areas.

This is the 2014 beaver survey. We found a total of 250 total beaver lodges, and the ones in red are active, and these are widely distributed. Most of the -- many ponds in the area and also quite a few along the river, Susitna River.

And these are all the incidental observations we've collected from other researchers in the area of muskrat, mink and river otters. So quite a few; mostly river otters sightings or tracks, and widely distributed, using riverine areas predominantly.

The proposed modifications to the study. Of course, the Chulitna Corridor has been removed from the study area, and the Denali East option has been added.

AEA proposed to substitute the two seasons of incidental observations of muskrats from 2013 and 2014 in place of the first year of muskrat pushup surveys, and then a muskrat pushup survey is planned for spring 2016. So that will be the second year of surveys.

We think we can still fulfill the study plan objectives.

And then this just reiterates that the mercury analysis was moved to Study 5.7.

Steps to complete the study. Complete a second year of river otter and mink track surveys during winter 2016; survey muskrat pushups this spring; and then a cumulative data analysis will be completed for the USR.

MR. LAWHEAD: All right. Thanks, Alex.

Do you have any questions or comments on this study?

MR. WOOD: This is Mike Wood with SRC.

MR. LAWHEAD: Go ahead.

MR. WOOD: Were there observations made on the Middle River regarding river otters and beaver?

MR. LAWHEAD: Yes.

MR. WOOD: Thanks.

MS. McHENRY: Yeah. This is Ruth McHenry, Copper Country Alliance.

When some of these animals, muskrat, otter, go overland, kind of on walk-about, did you see any major differences from one year to another of how many animals were doing this?

MR. PRICHARD: We have -- all we get are a snapshot of movements since the recent snowfall, so we're looking at, you know, tracks over a couple day period. I'm not sure we can answer that.

MR. LAWHEAD: Yeah. It would be -- it would be basically impossible to try and answer that from the -- from the results that we have. It's just not intensive enough. We don't have any marked animals. It's difficult to know which individual -- which individuals -- it's impossible to know which individual's tracks you're looking at. So you could maybe get at that with a lot more survey effort over a longer period of time, but... Now, we do know that -- well, from the track surveys, otters are moving between drainages through upland areas, but we -- but that's because we can track them in the snow, and we can't do that with beavers. So we really have no idea about movements of beavers.

Any other questions or comments?

Okay. Hearing none, I think we'll adjourn for lunch now, ten minutes early, and reconvene at one o'clock.

MR. GILBERT: Yeah. Let's try to be ready at one o'clock sharp, everybody in the room here, and then you can move us ahead.

Okay. Thanks to everybody on the phone. We'll start again at one o'clock sharp here in Alaska.

(Midday meeting recess)

MR. GILBERT: Okay. We have several more wildlife studies to go through this afternoon, and we just have maybe one or two new in the room, and maybe there's some new people on the phone.

So who -- we have a couple new people?

Earl, do you want to just state your name and...

(Additional participants in meeting room introduce themselves.)

(Additional participants attending telephonically introduce themselves.)

MR. GILBERT: Okay.

MR. LAWHEAD: All right.

MR. GILBERT: Well, then we'll go right into -- we'll start with bats. We already did the aquatic furbearers, so we got the -- they're on the agenda, though, otherwise.

MR. LAWHEAD: Right.

Okay. I'm going to be talking about the bat study today. Our study lead is not available. So I'll jump right into it here.

///

///

BAT DISTRIBUTION AND HABITAT USE

(Study 10.13) - Todd Mabee, Brian Lawhead, ABR

MR. LAWHEAD: So Study 10.13. This is another one that has been completed based on work done in 2013 and 2014. The two years of acoustic surveys have been conducted, searches for roost sites, maternity colonies, or hibernacula have been conducted, and then an additional effort to attempt to capture and radio track bats to locate roosts was undertaken in the second year.

Objectives were to assess the occurrence of bats and the distribution of habitats used by them, focusing on the inundation zone and the camp infrastructure areas, not -- not in the access corridors. So it's more focused than some of the other wildlife studies.

Part of that was a review of information to just try and gauge the potential for these different types of roost sites that are important in the life history of bats, such as roost -- you know, general roosts, day roosts, night roosts, maternity roosts, and hibernacula.

And that involved looking at geological

features and should also -- should also -- well, the crevasses there are on cliffs, caves of which we did not find any, and the geology guys didn't know of any either.

And then we also looked at as many human structures as we could.

There were no bridges in this study area, or mines, but we did look at a number of buildings.

Again, the methods were primarily acoustic surveys and then some looking for roosts.

There were a few variances, again similar to other studies. The lack of access on CIRWG lands in the first year prevented us from working there, but we rectified that in the second year by adding four sites on CIRWG lands in the -- in the study area, and continued monitoring at six sites that had been monitored in 2013 where we got the highest levels of bat activity to try and get an idea of how much annual variability there was in the -- in the results. And then to also try and maximize the probability that we would actually capture and be able to mark bats.

In 2013, another variance was we -- we look at some structures outside of the study area nearby. We weren't able to get permission to search

everything that was in the study area, but we tried to search as many structures in the general region as we could.

And then in 2014, effort was focused mainly on the capture efforts.

So it was a bit of a surprise. We figured the bats were in the area, but we, in 2018 (sic) we documented calls at 85 percent of the 20 sites we monitored, 17 of 20 sites. And this just shows the distribution of those sites. And then the -- and the study area itself is the reservoir inundation zone, and then the dam and camp infrastructure area.

And this shows the distribution of activity. It was variable among different detector stations, but there was a fair amount of activity detected in the reservoir zone, with habitats near or along streams being the most productive.

In 2014, these are the stations that we revisited here on the north side, and then the ones with the C prefix are the four that were added on. CIRWG lands, I should say. One there. And then the G sites are ones at which we had the greatest amount of activity in 2013. So, you see this site was productive in 2013 and 2014, and this -- this new site was fairly productive in 2014.

This just shows a distribution of hits, mean passes per detector-night, which is sort of a standard metric for comparing bat calls, and a bat -- acoustic detectors, peaked in July and in September. And those are kind of two periods when you would expect maternity colonies to be active in this -- in this part of the year, and then prehibernation swarming occurs in the fall, which might suggest they're wintering in the area or it might suggest that they were just leaving the area; it's hard to say.

In 2014, there was -- we didn't get quite as many data because we had fewer detectors, but some of the peak values were higher than in 2013, but, in general, the distribution of activity was lower. Part of the roost site assessment was to examine and rank the suitability of cliffs in the study area as roost sites, looking at the structure of the cliffs and the depth of crevasses, also looking at distribution of roost trees.

Again, these are the -- the human structure searches. We searched -- searched as many as we could get permission to, including some very old cabins, old trapper cabins, and some newer ones, which tend to be tighter buildings. We didn't find

any bats or any sign of bats in any ones we had access to, which strongly suggests that they're using natural roosts.

So in 2014, there was -- wasn't necessarily a decision point in the RSP, but the understanding was that, you know, depending on the results of the first year, we would adapt the second year of study to try and focus on these -- on the -- on the roost sites. So we concluded that the best way to try and do that would be to actually mark some bats, which is a -- you know, it's a -- it's a bit of a crap shoot because most bat marking studies go to areas where they know there are lots of bats and you can count on getting access to a lot of them.

In this case we knew there were bats in the area, but they're, you know, scattered widely throughout the area. So we knew it was going to take a lot of effort, and, in short, we only got one bat, after a lot of effort. But that bat was a valuable one. It demonstrated that it was -- they were using these cliffs in the reservoir zone as roost sites.

It's a male, and males tend to, you know, use more disbursed roost sites than females. It would have been great to have gotten a female to see if we could locate a maternity roost, but it didn't

happen.

Now I guess I -- I guess it was a decision but... Sorry.

So, again, it was predicated on locating roost sites. We didn't, but we knew there were bats there, so we tried harder.

No modifications because the study is completed.

And we'll take any questions or comments.

MR. GILBERT: Questions for Brian on bats?

MS. LONG: Hi. This is Becky Long from SRC.

So are these -- the cliffs where you show that -- that the bats are, are these cliffs -- are these going to be inundated if the project goes ahead?

MR. LAWHEAD: I believe that one would be.

Hold on here. Let's see if I -- we actually showed it on the...

I don't think we showed it on here necessarily.

Yeah. I can't say exactly where it was. But my understanding is yes, it was right on the main stem of the Susitna in the inundation zone. So, you know, I don't know the exact elevation. I think it

might be in the report. I think we did talk about that in the report. So you might try looking it up.

MS. LONG: Okay. And a follow-up question.

MR. LAWHEAD: Or I can -- or I can look it up.

MS. LONG: Okay. Thank you. And I need to look at the report better.

Wasn't bats having some sort of wasting disease or some disease in the Lower 48? I just wondering if our bats up here have that.

MR. LAWHEAD: It's called the white-nose syndrome, and it's -- it's -- yeah, it's -- it's spreading, has spread pretty widely in the northeastern and then into the central U.S., and it's certainly something that lots of people are very focused on. There's no indication of it in Alaska at this point, and one of the -- one of the protocols we followed in conducting this work was all of the decontamination protocols that have been developed for that disease in the Lower 48, which involve, you know, cleaning, sterilizing all of the equipment between successive capture sites. It's fairly labor-intensive. But at this point there's no indication of it in Alaska.

Ironically enough, there's actually a meeting of a bat working group happening today here in Anchorage, and I'm sure that's one of the topics of discussion there. It's something that bat biologists all around the western U.S. are very focused on trying to prevent it and -- and also to monitor populations to see if it shows up. It's a -- it's --

MS. LONG: And so there like --

MR. LAWHEAD: -- a fungal --

MS. LONG: -- if one of us made a project, what -- there would be certain protocols that would have to be abided by, like in construction activities and stuff?

MR. LAWHEAD: No. No. It's specific to -- so it pass -- it spreads in hibernacula where you have all these bats concentrated, and it causes them to arouse in the middle of the winter and -- and burn up energy prematurely and can contribute to mortality. So the real concern is -- is spread through physical contact, like for cavers or -- or researchers who have been in caves where the disease has occurred. So it's sort of like, you know, some of the water-borne diseases that -- of fish or water-borne disease -- things like that that people

take very strict precautions to try not to spread it.

But it's -- it's extremely unlikely that any -- any construction equipment would be involved, because they don't hang out in bat caves, unless it was the Batmobile.

Sorry.

MS. LONG: Well, you never know with this project.

MR. LAWHEAD: Exactly.

MS. LONG: Thank you very much. Sorry I sounded kind of dumb about it.

MR. LAWHEAD: No, that's all right.

MR. GILBERT: Good question.

MR. LAWHEAD: There are no dumb questions.

MR. RYCHENER: This is Tyler Rychener with Louis Berger. I just had a quick question.

Do you have any thoughts about why the activity in September was so different between the two years?

MR. LAWHEAD: No. You know, it's -- I mean, this is real new information. No one that I'm aware of has done this kind of work in Alaska. It's kind of like casting it out there and seeing what you get.

MR. RYCHENER: Okay.

MR. LAWHEAD: It was -- you know, we trying to assess this area, as opposed to most research which goes to places where they know there are bats and then working there. This is real interesting, though. I mean, those are more widespread than anybody suspected.

All right. Any other questions or comments?

Okay. Hearing none, we'll go on to wood frogs, which is Study 10.18. And this study was led by Todd Mabee from our Oregon office, so I'm going to turn it over to him, as soon as it pops up here.

I can -- I'll change the slides for you, Todd. There will be a little bit of delay, so don't yell at me.

UNIDENTIFIED SPEAKER: This one is also a study completion, right?

MR. LAWHEAD: Yes.

Don't get ahead of yourself.

UNIDENTIFIED SPEAKER: I'm sorry.

MR. LAWHEAD: Leave us something to talk about.

UNIDENTIFIED SPEAKER: Okay.

(Off-the-record discussion)

MR. LAWHEAD: All right. Go ahead, Todd.

///

///

WOOD FROG OCCUPANCY AND HABITAT USE
(Study 10.18) - Todd Mabee, ABR

MR. MABEE: Okay. Thanks, Brian. I'm just going to start with a mic check to make sure you can hear me okay.

MR. LAWHEAD: Yup, you're coming in great.

MR. MABEE: Okay. Great.

Okay. Yeah, I'm Todd Mabee with ABR, and I'm going to talk about the wood frog study. And I'll start off with just kind of an overview of the status.

The short version is that the surveys were completed in 2013 and 2014, and occupancy estimates were completed for both those years, and the study objectives have been met, and the study has been completed.

Next slide, please.

The objectives. You've all read the report and seen this. You know, the main -- the main objective here is to estimate the occupancy rate for breeding wood frogs in suitable habitats in the study area. And then we opportunistically looked for the presence of a chytrid fungus.

Next slide, please.

Primary study components were our auditory field surveys, the occupancy modeling and habitat associations, acoustic monitoring, and then the opportunistic chytrid fungus bioassay.

Variances. There were some variances in the study, and they occurred for a variety of reasons.

In 2013 and 2014: Habitat mapping and fish presence data were not available for the study areas; we couldn't use that.

In 2013: As was true for other studies, CIRWG lands were not accessible; but fortunately they were in 2014.

And in both 2013 and 2014 we had real slight differences in the timing of our field surveys, just because of logistic challenges.

Additional variances included the removal of the Chulitna Corridor and the addition of the Denali East Corridor. And in 2013 we did the opportunistic sampling of the chytrid fungus, and in 2014 that was dropped because of the small number of adult frogs we were able to capture in 2013.

MR. LAWHEAD: So for those that aren't familiar with it, chytrid fungus causes a disease

that leads to high mortality of frogs. It's been noted in sort of worldwide declines of a number of amphibian species, frog species, so it -- and it has been detected at some places in Alaska. So there's concern by the Fish and Wildlife Service that it might potentially be spread into this area as a result of project activities. So the idea was to look for it early on.

MR. MABEE: Yeah. Thank you, Brian.

Now the summary of results. We'll start with the auditory surveys. In 2013, we surveyed 90 wetlands and water bodies, and in 2014, we surveyed 104 randomly selected wetlands and water bodies. Sampling was done late in May and early June. We found that frogs were distributed widely, from tundra to forested wetlands, and that frogs were detected at -- you'll see they were detected at a greater percentage of times in deep water habitats in both years, deep water being a depth greater than 1.5 meters. And the naive or uncorrected estimate of frog occupancy was 52 percent in 2013 and 20 percent in 2014.

We've got two maps coming up. This is a -- or two figures coming up. This is 2013. Just trying to show you where the surveys were conducted and

where frogs were actually detected. The yellow indicates the sites where frogs were detected, and you can see those were throughout the study area. The red indicates sites where frogs were not detected.

This is the same -- same map, except for 2014. Remember that we surveyed in the CIRWG lands, the Gold Creek Corridor, and also in the Denali corridors, with yellow showing where we detected frogs and red where they were not detected.

So to summarize the results, from our acoustic detectors which we placed out there, they record frog colony activity. And the pattern that we found across both years is that colony activity increases throughout the day, it peaks around 1:00 to 2:00 in the morning, declines sharply by around, say, 5:00 a.m., then it repeats the cycle of increasing throughout the day again.

We estimated detectability in both years. In 2013, that was about 60 percent, which was similar in 2014 to what we found in the Gold Creek Corridor of about 56 percent. The detectability was much lower in the Denali Corridor; about 16 percent, with one visit.

We also estimated occupancy in both years.

You'll notice that occupancy was high in deep water habitats, again, depths of greater than 1.5 meters, in both years. And it was low in the shallower water habitats, especially in 2014.

No modifications are proposed, and the study is complete.

MR. LAWHEAD: All right. Thanks, Todd.

Do you have any questions or comments?

MS. LONG: This is Becky Long from SRC.

I wanted to ask what is the meaning of the occupancy, is you found they were higher in the deeper water. I just -- is that abnormal or whatever? I mean, it's just something you notice?

MR. MABEE: One of the reasons that we talk about in the report is that, you know, if the frogs deposit their eggs in a really shallow environment, then they're prone to drying out, and that would be, you know, bad for their survival. So that's probably one of the main reasons that we suggest that we would find a higher occupancy in the deeper water habitats, in that it's just -- it's just better breeding habitat for them.

MS. LONG: So one could say that the breeding habitat is -- is in pretty good shape?

MR. MABEE: Well, yeah. And, you know,

what we can talk about really is just the occupancy rates that we found in the study, and certainly in a lot of locations those -- those rates were pretty high. You know, especially in the -- the lower elevation sites.

MS. LONG: Thank you.

MR. LAWHEAD: Yes. So one of the things you're looking at, Becky, is to -- so if you go out and you don't hear a frog, does that mean it's not there or you just can't detect it? And so these methods are directed at trying to evaluate your chance of detecting a frog when it's present. And when you do, look at different variables to try and figure out what helps discriminate between sites that are occupied and those that aren't occupied; and that's how the water depth came up as -- as an important one.

Any other questions or comments?

All right.

UNIDENTIFIED SPEAKER: Carnivores.

MR. LAWHEAD: Yeah, we've done aquatic carnivores. So we're going to move on to distribution, abundance, and habitat use by large carnivores, which is Study 10.8.

And Alex, why don't you take that one away.

And I can chime in if there's -- and then we also have Earl Becker here in case there are certain questions about the work that Fish and Game did.

I should mention that this was, again, a collaborative study between Fish and Game and ABR. There were a couple of components that ABR worked on and a couple that Fish and Game worked on. So Alex will explain that as he goes through it.

DISTRIBUTION, ABUNDANCE, AND HABITAT USE BY LARGE CARNIVORES

(STUDY 10.8) - Alex Prichard, Brian Lawhead, ABR

MR. PRICHARD: Okay. Can you hear me all right?

MR. LAWHEAD: Yup.

MR. PRICHARD: Okay. So, yeah, this -- the study implementation report was filed in November of 2015. The fieldwork is complete, and we're still waiting on some lab analyses and to complete the analyses when we get those back.

But the status -- so we -- Fish and Game -- there's three components to this: Analysis of line transect data that Fish and Game conducted to get population estimates, and that's complete.

And then ABR conducted two years of snare deployment, collect hair samples from bears along the

downstream study area, and we completed collection of those hair samples, and as I say, we're waiting on lab results and then to analyze those results.

And then Fish and Game worked -- conducted a population survey of -- a minimum count of wolves in the study area, and we looked at interesting information on wolves.

MR. LAWHEAD: Probably just move on here, Alex. I'll go to the next slide.

MR. PRICHARD: Okay. And then like I say, the components are the black and brown bear spatial modeling of population density using existing data that Earl Becker of Fish and Game conducted. And then the DNA and stable isotope analysis of the new hair samples that ABR collected along the Susitna River at spawning, salmon spawning areas. And then the wolves component, which consisted of looking at existing data and at new aerial survey that Fish and Game conducted.

And variances, the bear data from game management unit sub -- game management unit, subunits 13A and B were excluded from the population estimation analysis. They concluded that it didn't have an effect on the study objectives.

Then we have the land access issue, similar

to other studies, in 2013. When we conducted the second year bear hair samples, in 2015, we had access to a much larger area. There were quite a few additional salmon spawning areas. So that was abandoned. And over the two years will produce a minimum estimate of the number of black bears in that area and -- and get good, hopefully stable isotope information on diet composition.

And then Fish and Game added a survey for wolves, in January 2015, to obtain a minimum count of wolves in that area. That aerial survey wasn't in the study plans, but Fish and Game thought it would be useful. So that was conducted.

So this is the results of the first part, which was a population estimate that Fish and Game did from line transect data. They re-analyzed 1238 random transects using the latest techniques and line distance sampling, mark-recapture, and multiple-covariates. Estimated that 1262 black bears inhabited the study area and 841 brown bears were in the study area.

This is kind of the output that model produced. The black areas are shaded to show the higher densities of black bears in this case. And then this is the similar map for brown bears. So,

again, the higher -- the darker black colors are higher estimated densities of brown bears in spring.

And then this is a summary of results of our hair snaring. So what we did is put these break-away hair snares along salmon spawning areas and areas where we thought there were either brown bear trails -- or either kind of -- any kind of bear trail or areas where they're constricted and we thought a bear might walk through. The snares were designed to break away once a bear walks through but hopefully catch some hair on the snares.

We did that in 2013, put a total of 52 snares out for an average of 49, almost 50 days, from mid-July to late September, and we collected 77 different hair samples from 34 different snares at nine sampling locations. And those hair samples were analyzed for DNA analysis to identify hairs to the individuals and identify their sex and species.

We came up with estimates of 16 different black bears, including nine females, six males and one of unknown sex, and 11 brown bears, who were nine females, one male, and one of unknown sex in the study area that were sampled. That's a minimum population count, not all of the bears in the area.

But -- and then we conducted stable isotope

analysis on the hair samples, and that looks at -- gives you an indication of what the bears have been eating, in a general sense, looking especially at differences between plant, terrestrial meats and salmon in the diets of brown bears and -- for both bears.

You go on to the -- we are through with bears.

You go on to the next slide.

This is the kind of results you get. The triangles are brown bears, and the circles are black bears. Values in the lower left tend to be more plant diets. As you move further into the upper right, that tends to be more salmon in the diet. And then terrestrial meats would be somewhere in between. So this shows the difference between species and also quite a bit of difference among individuals, brown bears.

We don't have the results back for 2015 yet, but we'll be able to add those and then analyze these data more completely.

So this is just similar results for 2015. We were able to sample more areas, put out more snares. We had 64 total snares, 19 different locations, average (indiscernible - lowered voice) 60

days, between, again, July and September. And we collected more hair samples, 134 different hair samples from 58 different snares at 18 sampling locations. So pretty widely distributed.

And then this is a -- just the -- some survey areas that were areas that were surveyed by Fish and Game for wolves, to try to get a minimum count of wolves. And the blue areas were surveyed, and the red areas were areas that were surveyed, but they're high winds, that made it more difficult. And the yellow areas were not surveyed.

MR. LAWHEAD: So these are the access corridors here, and then that's the reservoir there.

Go ahead, Alex. Sorry.

MR. PRICHARD: Yeah. And then what's in the game management Unit 13E survey area, which is the northwestern portion, that blue area, 27 wolves were observed in six groups, and the largest pack was 16 animals.

And no modifications are -- to the study plan are needed to complete the study. All the work except lab analysis and final report is completed. Yeah, so complete the DNA and stable isotope analyses, and then synthesize the historic and current data on bear and wolf populations and habitat

use for the ISR.

MR. LAWHEAD: All right. Thanks, Alex.

We have comments or questions?

MS. WOLFF: I've got a question. This is actually -- I didn't get my name signed up at one o'clock. I don't know if it's Kirby running it.

This is Whitney Wolff from the Talkeetna Community Council.

I'm just curious from your variances why the bear data from game management Unit 13A and B were excluded in your population (indiscernible - telephonic speech) analysis.

MR. LAWHEAD: Yeah, was it -- maybe Earl can talk to that a little bit more. But if you look here on this figure, 13E is up here, and the only portion of the study area that would have 13A was down in here. So originally, you know, we had delineated the study area as being a little bit larger, but it was just -- this section didn't -- they hadn't surveyed that area at the time of the 13E surveys. So it was a -- not -- the data were not collected at the same time.

Anything else, Earl?

MR. BECKER:Yeah. You know, a lot of it had to do with going back and analyzing the data in a

spatial sense. It took a lot of GIS processing, and we had never done that before. So we put together what we felt was a regional budget and went over that just to do the 13E part. So we didn't have any money left for the 13A and B, nor did we have any time. It wasn't even a question of money. You had to beg time that was going to pay for for a GIS programmer. I took more than what I -- you know, I struck a bargain and took more than that, and I wasn't going to get any more than that. And so it wasn't even a question of money, it just -- it was --

UNIDENTIFIED SPEAKER: Yeah.

MR. BECKER: And so we looked at it, and there were no -- I think the closest bear to the impoundment was like eight or ten miles away, brown bear. There wasn't a distribution of brown bears that was -- you would look at our distribution of the 90 brown bears we saw in 13A and B, and they weren't, you know, centered on the Susitna River or anything like that.

So there really wasn't much in the way of information gain. We could project slightly to -- up the other bank very well with the good model that we had, and so it was -- it just wasn't doable with the resources we had, and it wasn't -- it didn't impact

the emphasis at all.

MR. LAWHEAD: Could you hear that answer okay, Whitney?

MS. WOLFF: Yeah. I could hear it great. Thanks, thanks a lot. That was a good answer.

And just one more quick one. I hate to go back, but it sounded like in this particular study, because you couldn't access them in the 2013 study areas due to the -- due to the access issues, that you incorporated more in 2015, and I just -- I didn't catch that. I may not be able to go back in the prior frog survey that there it has the same variance; that they couldn't get the certain (indiscernible - telephonic speech).

I wasn't clear whether they added -- it didn't sound like they did anything in 2015. So this study prompted me to ask this about the frogs, whether they only did that for one season in 2014 on the the CIRWG lands.

MR. LAWHEAD: Yes.

MS. WOLFF: Does that make sense? The frog guy is still there?

MR. LAWHEAD: He's not, but I am. And yes, the access to the CIRWG lands was in 2014. And the frog surveys were conducted in the Gold Creek

Corridor of that year.

So it was looking at the -- you know, the Gold Creek Corridor, which couldn't be sampled in 2013, and also the Denali East Corridor, which wasn't sampled in 2013.

MS. WOLFF: Right.

MR. LAWHEAD: So over those two years, the entire study area was sampled.

MS. WOLFF: Right. So I guess -- I guess sometimes it's confusing to know whether, you know, the remainder of the lands got two years and those particular sites only got one. I'm just trying to sort that out with the variances.

MR. LAWHEAD: Yeah. It kind of depends a little bit on the study.

MS. WOLFF: Right.

MR. LAWHEAD: With the frogs, we concluded that two years of complete study over the entire study area wasn't necessary to achieve the objectives.

MS. WOLFF: Okay. Thanks.

Carry on.

MR. LAWHEAD: Thank you.

UNIDENTIFIED SPEAKER: Thanks.

MS. THOMAS: This is Cassie Thomas from the

National Park Service. And I have a question, if I may. And pardon me if you addressed this, but I didn't notice if it was mentioned.

With the bear survey work, I understand that you excluded some areas where there were high concentrations of people, and I'm thinking that some of those concentrations were probably field camps for various studies for this project. So I'm wondering if there was any kind of incidental reporting of bears that you could use to -- to try to come up with some sort of figures for those areas.

MR. LAWHEAD: No. We didn't really try to do that. The problem was, you know, you're putting these wire snares out there, and -- and 2013, there was an awful lot of activity in the area, so we avoided, you know, like some of the focus areas and areas near cabins or dwellings where dogs might be or where people might be. That -- that level of activity was much lower in 2015, so we were able to access a lot more sites. But we don't really have any way to, you know, gauge sort of incidental observations of bears in those areas in -- in those high-activity areas in 2013.

MS. THOMAS: And a lot of those would have been along the river, correct, they would have been

concentrated along the river --

MR. LAWHEAD: All of these --

MS. THOMAS: -- (indiscernible - simultaneous speech)?

MR. LAWHEAD: Yeah, all of the -- all of the snags, hair snag sites were along the river --

MS. THOMAS: Right.

MR. LAWHEAD: -- or near tributary mouths, right.

MS. THOMAS: Right.

Okay. Thanks.

MR. GILBERT: Yeah. Mike.

MR. WOOD: Yeah. I'm Mike Wood, the Susitna River Coalition. So I've got a couple questions.

When -- this is for ADF&G. When was the last time there was predator control efforts in the (indiscernible - lowered voice) for wolves?

MR. BURCH: Yeah. I figured that question might come up on this (indiscernible - lowered voice).

There was -- I believe wolf control is what you're talking about. That's the only -- there's no bear control, per se, in Unit 13. It was suspended this year. And beyond that I'd -- probably would

need to look it up and respond on the record in response because I would hate to get it wrong (indiscernible - lowered voice). There was no aerial control this past year.

MS. WOLFF: Not this year?

MR. BURCH: Not this year. And I'm not sure about -- we haven't done it every year. I'd have to look it up and see what exactly (indiscernible - lowered voice) have been.

UNIDENTIFIED SPEAKER: Okay.

MR. GILBERT: Can you guys hear on the phone?

MS. LONG: No.

MR. GILBERT: All right. Well, Mike Wood was asking about predator control, and Mark answered about wolves. There hadn't been a lot.

MR. BURCH: Yeah, the answer is that we do occasionally suspend aerial predator control for wolves, depending on the situation and our understanding of the wolf population, for instance, in the area. And it was suspended this past year. And I'm going to have to look at our official records to see beyond that, because I want to make sure I get that right.

MR. WOOD: Mike.

My point for asking the question is, is that in -- in the last 12 years I've noticed a large reduction in wolf numbers, and, of course, an increase in areas of moose and calves, cows and calves, obviously, and that's what you're trying to achieve, especially in -- in '13. But in the last few years, I've seen -- like, I can go through the winter and see no wolf tracks out there now. So your studies that you saw packs of up to 16 are really interesting.

So that's different from what I've seen. Like, this year, over in Jack River out of Cantwell, you know, herds of 60 to 70 moose in one canyon, that's the only place I've seen wolf tracks this entire year. And obviously because it was like going to Costco for the wolves, there's so -- so many caribou, and -- and there was one dead caribou and a lot of moose.

At any rate, that -- that was my question about the wolves, how accurate that can be when there's predator control involved in that area.

A lot more coyotes because of that, too, I suspect. I don't know that -- the exact correlation, but there's coyotes everywhere now, way more than wolves.

The other question I have, since I have the floor, is some of these studies, like the -- the bears, extend below where the dam project would be. And I don't know, maybe this is a question that has been answered, but for studies like the frog and the bat, these studies are up in the inundation zone and where there would be transmission lines.

I sometimes wonder why the studies weren't extended further down into the Middle River, where obviously we would see effects from a project of this size. And, I mean, to me something as simple as a wood frog is a very good indication of how healthy your ecosystem is. And I think being aware of how many frogs are in that area seems really important to me because of the amount of wetlands we have down there.

So I'm not sure sometimes why we're talking about Upper and Middle River and then sometimes we only talking about the inundation zone and the transmission corridors.

Is it --

MR. BURCH: Well, I --

MR. WOOD: -- you get studies --

MR. BURCH: You know, the answer.

MR. WOOD: -- just didn't (indiscernible -

simultaneous speech)?

MR. BURCH: -- I'd give you right now is those study areas were determined in the study planning phase --

MR. WOOD: Yeah.

MR. BURCH: -- with extensive, you know, evaluations and priorities, I guess, you know. Especially for direct impacts for the construction footprint in particular. But -- so they were determined, you know, based on the priorities, and they were set at that time.

MS. McGREGOR: And the impacts are different in the different areas.

UNIDENTIFIED SPEAKER: Seriously.

MS. McGREGOR: Then there's very different impact in the Upper River than the Lower River. But if you notice, the study area of a lot of these wildlife studies, they're huge. They extend well beyond the actual project footprint.

UNIDENTIFIED SPEAKER: Yeah.

MR. LAWHEAD: And also one of the primary ways to -- if you're going to look at the results of these studies, for the license application and impact assessment, is to look at a wildlife habitat evaluation of the whole area, including all the way

down past Talkeetna for the riparian area, and, you know, a pretty large area in the upper basin. So even if we didn't do studies in those areas, if you have data regarding habitat use of some of those species in that area, make the assumption that suitable habitats are getting used, in trying to take a look at that. I mean, one of the focuses of the riparian study is to look at potential change through time through modeling and how those would have (indiscernible - lowered voice) and draw conclusions on, you know, which species might be effected by those types of changes.

MR. WOOD: Right. I'm aware of that riparian studies. I think they're very good. But I also think the correlation -- once again, the integration of all these studies, the riparian and the wood frog and the bear, they all kind of -- they all blend into one another, you know? I mean, especially like kingfishers and merganser. You know, they're there because of fish. And so, at any rate, you -- so if you study one area and not the other, it -- I'm trying to understand why some have chosen to be studied, and I -- well, I do understand; it's just a massive area, so --

UNIDENTIFIED SPEAKER: No.

MR. WOOD: -- I do get it, but...

MS. McGREGOR: But yet to also look at what's the project going to impact.

So in the Middle River we may potentially impact the riparian area. So -- and they're using a habitat-based approach for wildlife. So that area, just as Brian indicated, is completely covered in -- in that assessment.

MR. GILBERT: Mark, did you have something to add?

MR. BURCH: I have something back on the aerial wolf control question.

MR. GILBERT: Okay. Yeah, he has some information on the aerial predator -- the predator control.

MR. BURCH: Yup.

And it's my colleague from BLM that asked Frank Robbins, the area biologist, when we were talking. Frank says the last year that the aerial wolf control happened was the winter of 2013-14, and there has been none since then.

MR. GILBERT: Okay. Thanks.

MR. WOOD: So the last year, just to clarify, 2013-14 was suspended?

MR. BURCH: That was -- that's the last

year it occurred.

MR. WOOD: It occurred. So during the --

MR. BURCH: In the last two years it has none.

MR. WOOD: So during the process of the studies, beginning in 2011, '12, '13, there has been aerial wolf hunting.

So does that get factored into the assessment of wolf populations and stuff out there? Like, how's that all work?

MS. McGREGOR: That's baseline.

MR. WOOD: Baseline.

MS. McGREGOR: Existing -- existing conditions is that Fish and Game periodically does predator control in that area.

MR. WOOD: Okay. Thank you.

MR. LAWHEAD: And there is --

MS. LONG: Hi. This is Becky Long.

So could Fish and Game clarify for me that the game management Unit 13 is still designated as an intensive management area to significantly reduce wolves?

Thank you.

MR. BURCH: Yes, it's still designated as an intensive management area where moose are

important for human consumption.

MR. LAWHEAD: Did you hear that, Becky?

MS. LONG: No. I couldn't hear it. Sorry.

MR. LAWHEAD: The answer was yes, it still is designated an intensive management area where moose and caribou are -- are considered to be important for human consumption.

MS. LONG: Thank you.

MR. GILBERT: Okay. Any other questions on the large carnivores?

MR. LAWHEAD: All right. Hearing none we'll move on to...

MR. GILBERT: 10.12.

MR. LAWHEAD: Yes, 10.12, 10.20 and 10.19. These three are all similar in that they have not yet been implemented. So they should go fairly quickly.

So I will talk about this one.

MS. McGREGOR: Thanks, Earl.

MR. GILBERT: Yes. Thanks, Earl.

MR. LAWHEAD: Hold on. Let me check my notes up here.

It's hard to talk and write.

SMALL MAMMAL SPECIES COMPOSITION AND HABITAT USE (Study 10.12) - Brian Lawhead, ABR

MR. LAWHEAD: Okay. Study 10.12 is small

mammal species composition and habitat use. This was planned as a desktop study only, no fieldwork. There was extensive fieldwork done in the 1980s relating the inventory of small mammal species that were captured relating to habitat. So we felt we had good project-specific data.

In addition, Study 10.10 collected some additional current data on snowshoe hares and different vole species. This has been deferred several times; haven't done it yet.

The objectives were simply to describe the species composition and relative abundance of the small mammal populations in the project area. And that's in the reservoir inundation zone and in the access corridors and camp and infrastructure area. And then to look at the habitat associations of those small mammals, with a view toward using this information to inform the Study 10.19, Evaluation of Wildlife Habitat Use.

So the basic approach will be to use data from the 1980s studies, from Study 10.10, and from other published studies in Alaska. And there aren't a lot, but there is some work that has been done at Denali Park, that will provide some useful information. And then apply that information on

habitat use to the vegetation and wildlife habitat map.

It was originally planned to be implemented in 2013, but it's been bumped down the road, mainly it's by funding priorities. It will only require one year to complete. And another reason, well, a habitat map is not yet available.

So going forward, no modifications to the plan methods are proposed or anticipated, except that the corridors Chulitna Corridor being dropped and the Denali East option being added have changed the study area somewhat.

As you can see here, this was originally the -- the area of the Chulitna Corridor, that was to be included. And this solid red area is the new addition for the Denali East Corridor. Basically, these are the same steps that we've talked about; we have to do the study.

Any comments or questions?

MS. LONG: When this -- this is Becky Long.

When this study does happen, is it ABR going to be doing it?

MR. LAWHEAD: Yes.

MS. LONG: Okay.

MR. LAWHEAD: Any other questions or

comments?

All right. We will move on to Study 10.20. I believe that's the next one.

MR. GILBERT: Uh-huh. Yeah. Wildlife Harvest Analysis.

MR. LAWHEAD: Yes.

Alex, are you still there? Alex?

MR. PRICHARD: Yeah, I am still here.

MR. LAWHEAD: Okay.

MR. PRICHARD: It's on muted, though.

MR. LAWHEAD: Okay. Take it away.

WILDLIFE HARVEST ANALYSIS

(Study 10.20) - Alex Prichard, ABR

MR. PRICHARD: Okay. So this is a study, again, that hasn't been completed. It's looking at harvest rates, using existing data, to be completed in one year, using data -- I am waiting on the slides here.

MR. LAWHEAD: Oh. Sorry.

MR. PRICHARD: Using data from Fish & Game harvest statistics and federal harvest statistics.

So looking at the past and current harvest effort; harvest locations; what the access modes were for small and large -- small game and large game, including furbearers. Looking a little bit at

seasonal distribution, abundance, and movements of harvested species. Incorporating results from other projects when available and appropriate. And then these data can be used for recreational and subsistence resource information.

So the components are compilation and analysis of Fish & Game harvest database records; review of Fish & Game reports; Fish & Game trapper questionnaires; the small game outlook and harvest surveys; review of Fish & Game and U.S. Fish & Wildlife Service subsistence surveys and harvest reports; interviews with regional biologists.

So basically, looking at all the available data we can get. And then a comparison of harvest patterns with the current distribution of game mammals and birds and development plans.

And this one was deferred to the future -- to the future, but it involves the use of existing data and can be completed in one year outfield work.

So no modifications to the study plan are needed.

The steps to complete the study are the same as the steps I went through earlier.

MR. LAWHEAD: I will make the point at this

time that if you want to get an idea of what the results of this study are going to look like, you can look at the technical memorandum that was done in 2012, which was one of the first studies done for this project, where we did go back and do most of these steps by compiling existing harvest information from the Department of Fish & Game and from the Fish & Wildlife Service. And that was all years that were available up to that point. And so this would be a follow-on effort that would take -- pick up where that one left off and add the additional data to it.

Any comments or questions?

MS. WOLFF: Yeah. This is Whitney Wolff with the council. I just had a quick question.

I remember that tech memo, but not in exact detail. I'm just trying to remember what -- if you included all the game units in that E, A, and B. Or how extensive were the game-unit representations for that?

MR. LAWHEAD: I can't remember offhand, but it did -- it did address more than just 13-E. And that is -- that report is available on the website, under the --

MS. WOLFF: Okay. Yeah.

MR. LAWHEAD: (Indiscernible - simultaneous

speech).

MS. WOLFF: And you --

MR. LAWHEAD: -- point.

UNIDENTIFIED SPEAKER: A and C.

MS. WOLFF: don't have that information for the upcoming year, what -- what game units it would encompass?

MR. LAWHEAD: Well, it would be the same ones that we did before.

MS. WOLFF: Yeah. Okay. I will take a look at it from the old tech memo. Thanks.

MR. LAWHEAD: Yup.

MR. PRICHARD: And then we looked at several different scales, because the data varies. As you zoom into a finer resolution, you -- some of the data is not available at that resolution, because some of the harvest locations are pretty general. So we did look at a -- several different spatial scales.

MR. LAWHEAD: Yeah. That's correct. That's a good point.

You know, the reporting, we are relying on the reporting, and that does vary by agency and species.

MS. McGREGOR: So the RSP indicates that

this study will cover subunits 13-A, 13-B, 13-E, 14-B, 16-A, and portions of 20-A.

MS. WOLFF: Great. Thanks, Betsy.

MR. LAWHEAD: Yes. Thank you.

MS. McGREGOR: Yeah.

UNIDENTIFIED SPEAKER: Mike has a question?

MR. LAWHEAD: Sure.

MR. WOOD: So we -- we did a subsistence survey in Chase --

MR. GILBERT: You know, maybe you could stand up.

MR. WOOD: Okay.

MR. GILBERT: I mean, just so people -- because they can't hear on the phone.

MR. LAWHEAD: Or come up to the --

MR. GILBERT: Yeah. Can you --

MR. LAWHEAD: Come up here.

MR. GILBERT: And this would help; we don't have to relay it.

MR. WOOD: Can you hear me, Whitney?

MS. WOLFF: Yeah, I can hear you.

MR. WOOD: Okay. We did a subsistence survey in Chase, and it was really good. Those guys asked great questions.

The other one I was wondering, the state

agency, if the Alaska Railroad could be added to the stats for the number of moose that are killed along the railroad that goes along the Susitna River for about 50 miles through 13-E. They might be kind of important. Because there is significant carnage and -- throughout the winter, depending on the year.

MR. GILBERT: Okay. Thanks.

MR. LAWHEAD: Harvest by train.

MR. GILBERT: Yeah.

(Off-the-record discussion)

MR. WOOD: There is no roadside along the tracks tallying the number of moose deaths.

MR. LAWHEAD: Right.

Okay. The last one for wildlife will be 10.19, Evaluation of Wildlife Habitat Use. And I'm going to let Terry Schick talk about that one.

EVALUATION OF WILDLIFE HABITAT USE

(Study 10.19) - Terry Schick, ABR

MR. SCHICK: Okay. So this is the wildlife habitat use evaluation study. This is one that we've referred to several times already today when people have been asking questions. The first question I think was about smaller woodland-nesting raptors, and have we done surveys for those, specific surveys for those? And the answer is no.

But we will be doing an assessment of available habitat for all the species that occur, are known to occur, or are expected to occur in the study area, including the downstream portions.

So when the wildlife habitat map for Study 11.5, which we will discuss later this afternoon, is completed, that's going to be merged with the riparian vegetation mapping, which runs from the dam site, down Middle River and into the Lower River. So we will be able to evaluate habitat use for wildlife throughout that full area, upstream and downstream.

And in this process we are determining habitat associations for this group of wildlife species, both birds and mammals and the single amphibian in the project area. And the goal is to rank habitat values for each of the mapped wildlife habitat types in very broad categories: High, medium, low, negligible value habitats.

Next slide, which is pretty much what I just discussed.

Components of the study. So this study, as Brian has mentioned, has not even been started. It can't be completed -- it can't be initiated until the wildlife habitat mapping is completed for

Studies 11.5 and 11.6, which I just indicated earlier.

Next slide.

Work has been done, and it will be completed in the next study year.

Modifications going forward, the first one just really follows from the modification to Study 11.5, which originally had a very big four-mile study area buffer. That was reduced to two miles, which matches the buffer used for the landbird/shorebird study and for the wetland mapping study.

So similarly in this study, 10.19 will also use that two-mile buffer study area.

And as we've discussed a number of times today, the Chulitna Corridor has been removed and Denali East Corridor has been added to the study area.

The last one here, we've determined instead of selecting individual bird species of concern, which always involves some level of subjectivity -- and a lot of people don't agree on which ones should be included and which shouldn't -- we decided just to include each bird species that's known or expected to occur in the study area and rank them all.

That will not be the case for mammals. I think some of the mammals are harder to evaluate, especially small mammals. But, again, the selection of species, this will be discussed in consultation with the technical working group. Well, that's the hope anyway.

Next slide. So this is just indicating revisions to the study area. This is actually an old slide. Chulitna Corridor should not be present any longer. But you can see Denali East. It's shaded in red there, heading up to Denali Highway.

MR. LAWHEAD: What is that? River mile what? Thirty?

MR. SCHICK: It's extending down to 29.5, is the southern portion of --

MR. LAWHEAD: Right. I just couldn't read the number there. Okay.

MR. SCHICK: The study area for 11.6. So yeah, the study area is all of the Upper River and then all the Middle River and then the Lower River all the way to 29.5.

MS. McGREGOR: Just below the confluence with the Yentna.

MR. LAWHEAD: Yes. That's the Yentna coming in right there.

MR. SCHICK: Yes. Yentna, yes.

So steps to complete the study are basically the original steps, because none of this has been completed yet. We will select the individual mammal species for evaluation. All bird species expected to occur will be assessed. And we will assess habitat use for wood frogs.

And we will use, as much as possible, project-specific wildlife survey data. So all the data from Studies 10.5 through 10.18, which you have heard about today, will be used in this process.

And we will rank habitat values, as I mentioned, in broad categories to determine habitat values for each of the mapped wildlife habitat types.

And if there are any questions, we can attempt to answer them.

MR. LAWHEAD: Thank you, Terry.

MR. GILBERT: Yeah. Good summary.

Questions for Terry?

MS. WOLFF: I've got a quick question. It's Whitney Wolff.

When you said select mammal species, it sounds like we can assume everything from 10.5 to 10.18 will be in there. But is there anything you anticipate not selecting or -- it just sounds like

there is a -- a prioritization left there. I am just wondering what that process entails, selecting the mammal species.

MR. LAWHEAD: Yeah.

MR. SCHICK: (Indiscernible - simultaneous speech).

MR. LAWHEAD: It will involve those for which we can find adequate information. Some of the -- some of the small mammals, there really isn't much information available on them, so we will be limited to, you know, the ones that we have information on, from either previous work in the area or current work in the area or from the literature.

So it's going to be most of the species of mammals. It's not -- we are certainly not going to omit any -- any of those that are important for subsistence use or ecological keystone species, like beavers and things like that. It will be a call that we make based on how much information we have to really be able to inform the habitat evaluation for those species. So it will be a small number of species that are excluded.

MR. SCHICK: And mostly small mammals.

MS. WOLFF: Right.

MR. LAWHEAD: Yeah. Mostly small mammals,

maybe almost entirely small mammals.

MS. WOLFF: Right.

MR. LAWHEAD: Yeah.

MS. WOLFF: Okay. I guess the continuation of my question is, you know, we have a lot of emphasis on conservation management, species, subsistence, cultural/ecological concern. And I heard you just say a term that I am -- may be the answer to my question, but are you charting any of these prey species of the small mammals?

For instance, you know, if you are finding in your isotope studies that the bears or anything in particular, small mammals, whether -- whether that's mapped in that particular identification of the -- of the important prey species.

MR. LAWHEAD: Yeah. We can't really tease the isotope data out to that level.

MS. WOLFF: That mile, yeah. You're just getting meter (indiscernible - telephonic speech). I get it. But I didn't know if there was any emphasis -- I haven't heard any -- on prey species, so I didn't know whether that was going to play a role in this or whether that would be back with the small mammal study or where that would play.

MR. LAWHEAD: No. It -- you know, we'll do

the best we can. I mean, the ones that are likely to be excluded are the ones that are not as abundant and/or as well studied and so would not be as ecologically important, just from a numerical or biomass standpoint.

But, you know, that -- having said that, the previous studies back in the '80s did do a real good job of, you know, cataloguing the species that are out there. So we will have pretty good information. And we will -- you know, we will do what we can and make some assumptions about --

MS. WOLFF: Okay.

MR. LAWHEAD: Yeah.

MS. WOLFF: And what was that term you used for beaver? You called it what? A keystone? What -- what was the term you used?

MR. LAWHEAD: Keystone species, a species that has --

MS. WOLFF: Okay. Thank you.

MR. LAWHEAD: -- real important ecological effects for other species.

MS. WOLFF: Sure. That's perfect. Okay. Thanks.

MR. GILBERT: Oh. Mike, go ahead.

Thanks for coming up. Yeah.

MR. WOOD: So one other I would -- I would mention is unique, but not overlooked, is the marine mammal influence coming up from the ocean, from the inlet, especially to 29.9. There is -- there is seals by the hundreds up in -- around the Yentna area and beyond, and up towards Willow. They are -- they are traveling for the fish, especially for hooligan. And locals have seen beluga up as far as Susitna station there, at the confluence of the Yentna.

So I know these are studies we talked about earlier, but there is a large amount of marine mammal activity that extends up into your -- beyond your 29.9, so --

MR. GILBERT: Thanks.

MR. SCHICK: Yeah. No, that's good information, and we would certainly take that into account when doing the habitat evaluations, as much as possible.

MR. LAWHEAD: Okay. Any other questions or comments?

All right.

MR. GILBERT: Do you guys want to take a break now --

MR. LAWHEAD: Yes.

MR. GILBERT: -- and then pick up with the

last four botanical?

MR. LAWHEAD: Good idea.

MR. GILBERT: Okay.

MS. McGREGOR: Just before we take the break.

MR. GILBERT: Sure.

MS. McGREGOR: Just to follow up on something Cassie asked about the presentations: They have all been posted.

MR. GILBERT: So, Cassie, if you are still on, all the presentations are up.

MR. LAWHEAD: For tomorrow.

MS. THOMAS: Wait, I think, was just waiting for the (indiscernible - telephonic speech) conditions one. But yup, it's there now. Thank you.

MS. McGREGOR: You are welcome.

MR. GILBERT: Okay. So let's -- let's go ahead and take a break and start up at the bottom of the hour, at 2:30.

(Mid-afternoon meeting recess)

MR. GILBERT: Okay. We are going to start up again with the botanical studies.

Can you hear us on the phone, everybody?

MR. LAWHEAD: Is anybody left?

MR. GILBERT: Anybody?

UNIDENTIFIED SPEAKER: Yup. I can hear you real good.

MR. GILBERT: Okay.

UNIDENTIFIED SPEAKER: We heard it was Terry.

MR. GILBERT: All right. Terry is going to start with 11.5.

VEGETATION AND WILDLIFE HABITAT MAPPING STUDY IN THE UPPER AND MIDDLE SUSITNA BASIN (Study 11.5) - Terry Schick, ABR

MR. SCHICK: Okay. This is Terry Schick again. I am also serving as program lead for the botanical studies, of which there are far fewer than wildlife, thankfully. We have five instead of 16.

Sue Ives is here and will present information on the wetland mapping study, as Wendy Davis is not available today.

And, Janet Kidd, are you on the phone? Sounds like --

UNIDENTIFIED SPEAKER: No. Janet just -- Janet just stepped out for a second, in her current broken condition, and she will be back in a second.

MR. SCHICK: Okay.

UNIDENTIFIED SPEAKER: But she is around.

MR. SCHICK: Very good. So I believe Janet Kidd will present --

MR. LAWHEAD: She's got an injured foot.

MS. McGREGOR: Oh.

MR. SCHICK: -- the summary updates for the rare plant study and invasive plant study.

So I will jump into Study 11.5, Vegetation and Wildlife Habitat Mapping Study.

This one has been moving steadily along. The status is indicated on this slide here. Initial results from the 2013 field season and then the subsequent mapping that was conducted in the early part of 2014 were presented in the ISR Parts A, B, and C. And then the status was updated again in the ISR Part D.

So field surveys were completed in 2013 and 2014, as described in the RSP. We got a lot of field data, almost 1500 full field plots -- or, excuse me, 1500 field plots, over a thousand full study plots, and over 400 rapid map-verification plots.

Digitizing for the what we are calling integrated terrain unit variables -- I will discuss those in a minute -- that mapping is ongoing. Actually, it's pretty much complete at this stage. And we are doing QA/QC of those ITU map polygons.

The study area is -- is huge. The two-mile buffer around the reservoir, the dam site, and the three existing transmission line road corridors, the study area is over 500,000 acres. So it's taken some time to produce those map data.

I am not going to go into the objectives here. Really, objectives are to present a vegetation map and a wildlife habitat map of the study area, which will be used specifically in Study 10.19, which we just discussed, for their wildlife habitat use evaluation.

Study components are pretty straightforward. And this is all in ISR Part A. Collect field data; verify their photo signatures; and map those photo signatures of the various variables, which we will discuss in a moment.

So the variances, there are really no variances for the field surveys. There were two study area variances, as we have discussed a number of times. The Denali East Corridor was added, and the Chulitna Corridor was eliminated from the study area.

On this one, we also discussed in Study 10.19. The original study area buffer was huge; it was four miles on either side of the

centerline for the transmission and road corridor alignments and then four miles on either side of the upper-level full-water level of the reservoir and dam site. That was reduced to two miles, which matches the study area buffer used for the wetland mapping study and for the landbird and shorebird study.

This is a depiction of the field plot sampled in 2013, where we did not have authorization to sample on Cook Inlet Region Working Group lands here along the Gold Creek Corridor and the southwestern portion of the reservoir area. And this is the plot sampled in 2013 and 2014. So we filled out Cook Inlet Region Working Group lands with field plots, in 2014, and then along the Denali East corridor.

Summary of results. We collected lots of field data, as I indicated already. Field surveys were completed. The mapping is pretty much done. We are error-checking that mapping now, and we are preparing final wildlife habitat types currently.

So in mapping, we are mapping Alaska vegetation classifications to the Viereck 1992. Classification for Alaska vegetation, we are mapping those to the Level IV of Viereck's classification.

We are also mapping physiography; surface

form, which are local-scale geomorphology types; and disturbance, when applicable. And largely, there is very little disturbance in the study here, but you get into some at the western ends of the Gold Creek Corridor, for example, here.

This is just a depiction of how ITU mapping will develop into wildlife habitat types. So on the left are -- there is a combination of physiography and Level IV vegetation types for each of these individual polygons. These will be aggregated into larger, more coarse-scale wildlife habitats that emphasize vegetation structure instead of species composition, which is typically more important for wildlife.

So it emphasizes vegetation structure and physiography primarily, to develop wildlife habitat types.

Proposed modifications, going forward as we complete this study, they are pretty much the same -- they are exactly the same variances that we discussed previously. The study is not completed, so these remain modifications as we proceed through completion of this study.

Steps to complete the study, we are in the process right now of reviewing the ITU mapping and

correcting that, as needed. We will need to join the GIS data between this study and the downstream mapping, which is being conducted in the Riparian Vegetation Study, 11.6. And the goal here is to prepare a projectwide wildlife habitat map that we can use for the Habitat Use Evaluation Study, 10.19.

And obviously, we will work on developing a final set of wildlife habitat types. We are doing that now, actually. And we are getting, hopefully as we speak, review of those preliminary wildlife habitat types from the researchers working on wildlife studies for this project.

So I will entertain any questions, if you have them.

MR. GILBERT: Questions for Terry?

MS. WOLFF: I've got a question. This is Whitney Wolff.

MR. GILBERT: Sure.

MR. LAWHEAD: Go ahead.

MS. WOLFF: This is regarding the variance about the study area buffer.

MR. LAWHEAD: Uh-huh.

MS. WOLFF: I've read all Parts A -- there wasn't much of B, and C, in the ISR. And I am just wondering where the decision point is, that -- where

you switch from four miles to two, or if that's addressed in the TM.

MR. SCHICK: It's not in the TM. It should be explained in ISR Part A.

MS. WOLFF: I just --

MR. SCHICK: (Indiscernible - simultaneous speech)

MS. WOLFF: read all Part A. I don't see it anywhere in there. And there is no errata in Part B.

MS. McGREGOR: Did you check ISR Part C?

MR. SCHICK: Yeah, it could be in Part C.

MS. WOLFF: The executive summary?

MS. McGREGOR: No. ISR Part C has Section 7.1.2 for every ISR Part C -- or proposed study modifications.

MR. SCHICK: Well --

MS. WOLFF: I will go back and look one more time. I just read the whole of Part C, but -- my main question was just -- I know this has to -- like you just said, it has to meet with the riparian vegetation study in 11.6.

And there is a lot of reference in Part A to this seamless mapping. And I am just wondering if this affected habitat types or all the -- you know,

you had several -- 29 preliminary ecotypes. I am just wondering if you had to eliminate any ecotypes or -- I don't -- looking for some kind of background on this decision.

MR. SCHICK: Well, I can tell you the decision really was made -- it's an "effectiveness of getting the work done" decision. Four miles is huge, as you can imagine, this four miles on either side. I think we erred in making that buffer that big, quite frankly. And in discussions with the wetlands mapping group, there were no indications that the wetlands mapping needed to be that big. A two-mile buffer seems sufficient to evaluate the effects of the project on wetlands.

And we ran this same scenario by the wildlife researchers and asked them: So do you think two miles is sufficient to assess effects of this project on wildlife habitats? And the answer was yes.

So with respect to the question of whether we are missing some habitats that we might have mapped in the four-mile buffer that was --

MS. WOLFF: No, I didn't ask you if you were missing. I wondered if it had changed, your 29 preliminaries, if -- if there is a shift.

MR. SCHICK: Well, there will be shifts, because we are reaggregating. The 29 was a quick first cut at what we might see, but that was done in -- at the point where we had maybe -- and if I am remembering right -- I don't -- I think we may have only mapped, say, 30 percent of the study area at that time. So we didn't have the full -- we didn't have the full data set of all ITU variables to deal with. We do now.

So you will see a different set than that 29. Some will be very similar; some will be different.

MS. WOLFF: Okay.

MS. McGREGOR: Whitney, I did just confirm, too. It's in ISR Part C, Section 7.1.2.

MS. WOLFF: Okay. Thanks.

MS. McGREGOR: Yeah.

UNIDENTIFIED SPEAKER: Yeah. Part C updated A, as I recall.

MS. McGREGOR: That's where modifications are.

UNIDENTIFIED SPEAKER: Yeah, modifications.

UNIDENTIFIED SPEAKER: Yes, correct.

MR. SCHICK: Any other questions?

No? Okay. Well, we can shift to?

UNIDENTIFIED SPEAKER: Wetlands.

MR. GILBERT: Wetlands.

(Off-the-record discussion)

MR. LAWHEAD: There you go.

WETLAND MAPPING STUDY IN THE UPPER AND MIDDLE SUSITNA BASIN (Study 11.7) - Sue Ives

MS. IVES: All right. So, again, I am Sue Ives, here filling in for Wendy Davis today. And I will talk to you about Study 11.7, Wetlands Mapping in the Upper and Middle Susitna Basin.

Similar to the veg and wildlife habitats, this study has been ongoing. We have an ISR submitted in June of 2014 that summarizes our 2013 data. And then an update, which is ISR Part D, going over our 2015 data.

Field studies were completed in 2013 and 2015, as described in the RSP. And as Terry said, we were able to collect a lot of field data, a nearly 1500 field plot sample. So that's over a thousand formal wetland determinations with functional assessment data collection, and over 400 rapid map-verification plots.

Digitizing our map polygons for wetlands within the study area is complete and is undergoing

senior level QA/QC at this time.

I don't know that we need to go terribly in depth into the objectives. Basically, our objectives are to map wetlands within the Upper and Middle Susitna Basin and to look at the ecological functions of wetland types present within our study area.

Components of our Study 11.7. We have field data collection, which is used to support the mapping and the functional assessment.

We have a multivariate wetlands mapping, which is incorporating ideas, ideas getting at wetland function.

We will be preparing a functional assessment for each mapped wetland type within our study area.

And, again, this study is being conducted in close coordination with the vegetation and habitat mapping study.

So field data collection efforts happen concurrently, and the mapping is also happening concurrently.

Variances. We had no variances for our field survey, for our mapping, or, you know, our functional assessment collect -- or, sorry, our functional assessment methods. And the two variances

we have had, I think, have been well covered today. The Chulitna Corridor was eliminated from project plans, and so it's no longer part of our study area; and then the Denali East Corridor, that additional north south corridor was added.

You can see here a depiction of our 2013 study results -- or, our 2013 field survey results. Sorry. And as you can see, we have got this Chulitna Corridor here for our 2013 effort; no Denali East option. No data collected within Cook Inlet Region Working Group lands. And a handful of plots are technically outside of our two-mile wetland study area, because this work was being conducted concurrently with the vegetation and habitat mapping, which at that time had a four-mile study -- or, four-mile buffer for the study area.

We will move on to a depiction of our 2013 and 2015 results.

So you can see here Chulitna Corridor is no longer part of our study area, and Denali East has been added. Yellow points are 2013 data collection; teal are 2015.

So you can see we focused heavily on the Denali East Corridor and filling these -- the lands that we did not have permission to sample in 2013.

Summary of our results. So, again, we collected field data in July and August of 2013 and then in August of 2015. And this was able to give us nearly 1500 field plots; over a thousand full plots, which are formal wetland determination plots, with functional assessment data; and a little over 400 rapid map-verification plots.

Wetlands mapping is completed, and this entails mapping our NWI class, or a Cowardin class; HGM wetland class; the Alaska Vegetation Classification, which is the Viereck publication, down to Level IV; physiography; surface form, which, as Terry said, is sort of a local-scale geomorphology. So are you on a crest? A shoulder slope? A toe slope? A drainage? And then, also, where applicable, disturbance type, which -- and as Terry pointed out, there is not a lot of disturbance within the study area, but in scattered places.

A depiction of our wetlands mapping. So here we have displayed just the NWI codes for you. But to give you a picture of what we are -- what we are looking at, this is wetlands mapping within a forested area in the study area. So large expansive uplands.

And here you can see our wetland polygons

broken out into seasonally flooded, saturated emergent types, saturated scrub-shrub, saturated evergreen scrub-shrub, and forested wetlands.

Proposed modifications are the same as our variances that were earlier discussed. Because the study isn't complete, the variances are still also considered modifications.

So no Chulitna Corridor, and the addition of the Denali East Corridor.

Moving on.

Steps to complete 11.7.

Senior level review of our map is ongoing. And this involves review and potential revision of both line work and attributes.

As Terry had discussed, looking at the places where our study area abuts the riparian study area and ensuring a smooth transition of line work and codes across the two study areas.

Developing a final set of multivariate wetland types that will incorporate our wetland-functional information. The idea of developing functional classes, groups of wetlands that perform similarly, so that you can look at the sort of aggregated set during your functional assessment.

On the theme of functional assessment, as we discussed in the ISR, there are some parameters that we are planning to tweak to make our results more representative conditions in the study area. The Magee model itself was developed from -- in -- in the eastern United States, and so it's developed for more -- areas with more anthropogenic disturbances. So where -- there are a few little tweaks we think we can make to make our results more representative.

We also intend to incorporate data from other studies, fish and wildlife. Well, fish distribution and abundance and fish habitat studies, wildlife studies, information available from recreation, and subsistence, and to be able to use that to amend our functional assessment outputs.

So, you know, we will get -- through the straight Magee model, we will get functional capacity indexes for, say, fish and wildlife habitat, but we intend to overlay other project data to improve those results.

And developing a final set of wetland functional classes, which is in progress.

Does anyone have any questions?

MR. GILBERT: Questions for Sue?

MS. McGREGOR: I would like to just make a

comment with respect to this study. I received a call from Army Corps, who can't be here for this meeting. But with all these different agencies, we have had a lot of turnover. And the functional assessment for this study was a completely collaborative process during the study planning phase. That was approved by the Army Corps, the EPA, Mat-Su Borough. They are using a combination of that Magee functional assessment, but isn't there -- what's the Cook Inlet meth- -- is it Grax (ph)?

MS. IVES: Oh, Grax (ph) mapping, which we actually really don't discuss here. Mike Grax (ph) has done extensive mapping throughout the Mat-Su Borough. And we do intend to crosswalk his wetland types to our mapping.

MS. McGREGOR: And he participated in some of the functional assessment discussions during the study planning phase, too.

And one of the issues is that there isn't a functional --

MR. GILBERT: And U.S. Fish & Wildlife Service was also --

MS. McGREGOR: And the Fish & Wildlife Service, too. Thank you.

So one of the issues is that there isn't a

functional assessment for -- suitable for the ecoregions that the project spans. So they did come up with an approach, but it was a collaborative process.

And all the documentation of that consultation is in the proposed study plan.

MS. LONG: Betsy, could you repeat that again? It isn't a functional what?

MS. McGREGOR: There isn't a -- the project area is huge, and it spans multiple ecoregions. And there isn't a functional assessment that's suitable for the entire project area. So there was a collaborative process, and ABR came up with kind of a composite approach based on methods that are used in other ecoregions or -- or even as -- I'm sorry --

MS. IVES: Oh. Sue.

MS. McGREGOR: -- Sue alluded to Magee, which is on the East Coast. It's not even from here.

And we did participate with -- there is a Cook Inlet methodology for functional assessment, and we did collaborate. Mat-Su Borough uses that quite a bit. And we collaborated with the -- I guess the developer of that functional assessment.

MS. IVES: Yeah.

MS. McGREGOR: In trying to come up with

what was suitable in developing a functional assessment to be applied in the project area.

MR. GILBERT: And the Corps of -- Corps of Engineers.

MS. McGREGOR: Yeah. It was the Corps of Engineers; the EPA; Mat-Su Borough; and, as Terry pointed out, Fish & Wildlife Service, as well. And all that documentation for the collaboration is in the consultation documentation for Section 11 of the proposed study plan.

UNIDENTIFIED SPEAKER: Thanks a lot.

MS. IVES: Okay. Well, if there are no other questions --

MR. LAWHEAD: Doesn't sound like it.

MR. GILBERT: No. We will keep going.

MS. IVES: I will close out of this guy and 17 open 11.8.

MR. GILBERT: Janet Kidd, are you there in Fairbanks?

MS. KIDD: Hello. Yes, I am here.

MR. GILBERT: Okay. If you are willing, you can take over and present the last two: Rare Plants and Invasive Plants, which --

MS. KIDD: Oh, okay.

MR. GILBERT: -- hopefully should be coming

on screen here soon.

(Off-the-record discussion)

MR. LAWHEAD: Take it away.

(Off-the-record discussion)

RARE PLANT STUDY

(Study 11.8) - Janet Kidd, ABR

MS. KIDD: So, yeah, we are going to -- I'm going to talk about the rare plant study that -- haven't done a whole lot of work on recently, but I will just summarize the work that has been conducted to date.

Slide.

So this is the status. You know, there was an initial study report completed in June of 2014. We conducted field surveys in 2013, with no variances; looked at a wide range of habitats in the study area, found two rare species.

Due to access restrictions, we weren't able to survey the Cook Inlet Regional Working Group study area. And so, you know, basically, when that's -- when the next study year comes up, we would -- believe that's part of our field surveying. But no additional field survey or data analysis has been conducted since 2013 for this project.

So objectives were to identify habitats in

the project area that support rare vascular plant species. The list that we came up, we derived from a larger database of rare plants that can be found in the region, essentially.

To look at habitats that we thought could be disturbed by project construction and/or operation activities that could affect the rare vascular plants.

And then we mapped the locations and made estimates on the population size for those species found.

So we had a selection of focal species and habitats. And we used data records that had been compiled previously in the area, mainly from the Alaska National Heritage Program. And then we focused on those species that are more rare within the state.

And so these rankings, which are summarized in the initial study report, but they -- they focus really pretty much on -- on putting -- you know, rare (indiscernible - telephonic speech) within the state. They are not on any kind of a, you know, endangered plant list, but they are considered rare. And so then we looked at those species and then habitats that are associated with them and conducted field

surveys to see if we could find them in the project area.

I think -- I guess I mentioned in the first slide there were no variances for the methods for the selection of focal species or habitats for the field survey for rare plants for this project, as described in the revised study plan.

So summary of results.

This is just showing the transects that we sampled in 2013.

So as I mentioned there, we did, you know, focus on, first, looking at habitats that might be associated with these rare plans and, then, conducted surveys to identify the species.

We did find a couple of rare plants: Vicia americana, which is a legume; and then Eriophorum viridicarinatum is a -- a sedge that's found essentially in (indiscernible - telephonic speech). It's a -- in a lowland -- lowland environ -- wetland environment. And the Vicia is actually kind of really more in disturbed environments.

Next slide.

There is a delay on my side here.

MR. GILBERT: Delay on this side, too.

UNIDENTIFIED SPEAKER: Sorry.

MS. KIDD: Oh, okay.

UNIDENTIFIED SPEAKER: Different reasons.

MS. KIDD: (Indiscernible - telephonic speech).

Yeah. So 16 transects were sampled. We found these, the Vicia, at Gold Creek Camp, which is the western end of Gold Creek Corridor; and then the Eriophorum viridicarinatum, called thinleaf cottonsedge, this was found on the terraces above the Susitna River. We also found it, though, actually -- part of our wetland survey, we did find that in a couple of places.

And then we did find several other rare taxa associated with other botanical studies. And I actually did see that. And in our initial study report, we did actually finally get the identification of those. And let's see, I was kind of looking through the report (indiscernible - lowered voice) -- associated with the riparian study, we did find (indiscernible - lowered voice). Oh, I'm sorry. Yeah, botrychium virginianum. And then violales (ph) (indiscernible - telephonic speech).

So they -- they actually -- that is in the initial study reports. So I think with -- by with -- with -- wasn't updated to acknowledge that we did

actually get identifications from the herbarium at the University of Alaska Fairbanks.

Next slide.

The Chulitna Corridor was eliminated from the study area, and the Denali East Corridor option was added. This essentially was -- you know, as an additional, alternative north-south corridor for the transmission line and road access.

The use of the list compiled (indiscernible - telephonic speech) -- using the list compiled in 2013, conduct the field studies to locate additional populations of rare plant species that were in the study area that went unsurveyed in 2013 and could be affected by project construction. And that will happen in the next study years.

And, again, estimate population sizes for any rare vascular plant species found in 2013. And 2004 -- 2015, we didn't do any actual field survey, so that would be basically when the study year -- the next study year we would complete our surveys in the new areas.

That's about it. So then do we have any questions?

Some of this might sound a bit redundant, because I think we did give this presentation awhile

ago. But I understand there might be other people on the -- on the call here today that haven't heard this presentation before, so --

UNIDENTIFIED SPEAKER: Okay. Thanks, Janet.

This is Vicia americana, by the way, at Gold Creek Camp.

MS. IVES: Yup.

MR. GILBERT: Any questions for Janet on rare plants?

UNIDENTIFIED SPEAKER: No questions, it doesn't sound like. Okay. So we can --

UNIDENTIFIED SPEAKER: Invasives.

UNIDENTIFIED SPEAKER: Yeah.

MR. LAWHEAD: First talk today with no questions or comments.

(Off-the-record discussion)

UNIDENTIFIED SPEAKER: Okay.

INVASIVE PLANT STUDY

(Study 11.9) - Janet Kidd, ABR

MS. KIDD: So this will be a summary of an invasive plant study that we started and -- in 2013. Again, that was the only year that we conducted field surveys. But this will -- I will just provide you a summary of what we found.

So this is documented in the initial study report. Again, it was compiled in -- completed in June of 2014.

We conducted field surveys for invasive plants in 2013 and also provided a -- just a preliminary ecological risk assessment for -- on the chart -- and some of the species that we found as part of the survey.

No additional field survey or data analysis work has been conducted since 2013 for the invasive plant study.

To identify the locations at which invasive vascular plant species have already become established in the project area. We did that by looking at a statewide database that provides location information for invasive plants that might be in the vicinity of the project area.

We estimated -- when we did find invasive species, we made estimates of population size and mapped their distributions.

And then determined whether any of the invasive species that we found, you know, could potentially pose an ecological risk to native plants and animals in the project area if they were to spread.

So, yes, Alaska Exotic Plants Information Clearinghouse database is the resource that we looked at. Plus, we also looked at aerial imagery. You know, because the area -- the project area is largely undisturbed, we really pretty much looked for, sort of, entry points, you know, that -- that would potentially serve as places where invasive plants could spread over time and collected -- focused our field survey on those areas.

And then we conducted an ecological risk, as I said, for -- for some of the species that might potentially have more -- be more a threat to the ecosystem integrity than others.

In 2013, there were no variances from the methods to conduct the field survey or the ecological risk assessments as described in the revised study plan.

This is just showing you the area that we -- that we focused on in 2013. So if it's in the red, you can see essentially it's focus is -- it focuses on the road. And then there is also basically a number of trails that come off of the Denali Highway and the Parks Highway, that come into the project area. And these are places that we thought, you know, could be certainly pathways for

invasives to come into the project area.

So we tried to basically focus on that -- you know, places where we know there is disturbance, and that's where invasive plants tend to establish, so that's our -- that was our focus.

Sampled 107 sites in late August. And as I mentioned, the Denali-Parks corridor, you know, ORV trails that were -- you know, provide access to the project area.

Twenty-eight of the 107 sites were revisits, actually, where previous invasive plant survey data was available, just to see if those areas -- you know, had the invasive plants, you know, reduced in population? Had they spread to a larger area? Were there more species, maybe, there? Just trying to do some repeated sampling, which was really useful.

And as you can see, we did find quite a few invasive plants. At 98 of the 107 sites we sampled, we did find invasive species.

And across all sites, we found a total of 31 species that are classified as invasive.

This will give you a species list and the number of sites that were recorded. The invasiveness rank, this is essentially sort of ecological risk

score in itself. There is a whole process that is involved, as described in the initial study report. It had to do with, you know, ability to control how -- you know, how well these plants establish. What sort of -- you know, what kind of risk can they -- you know, some species have more of a risk to native plants than others.

So that's essentially, when we were doing our preliminary ecological risk assessment, we used that invasiveness rank to help us do a preliminary assessment.

What we did find is that the populations in 2013 were negligible-to-small in size, so our ecological risk assessment focused primarily on a couple species. And at least right now, our general assessment was that the risk is relatively low and that this wasn't -- we could basically -- you know, we really didn't see large areas at any of our campsites that were, you know, extensive populations of invasive plants.

But the two that we did find, Hordeum jubatum, which is foxtail barley -- I'm sure probably some of you folks are familiar with that one -- and also Melilotus alba, the sweet clover -- I'm sure anybody driving the Parks Highway or even up from

here or Fairbanks north of town, you have seen that one.

And they do have fairly high invasive ranks.

The Hordeum, you know, basically, it's -- it's -- one of its traits is that it can -- it can colonize a wide range of habitats. So not in just, you know, well-drained, gravelly substrates, but also fairly wet areas. So, of course, it can potentially invade a, you know, wide range of habitats.

And the Melilotus is problematic because it does tend to form dense stands on river bars and then -- and consequently can have a potentially negative effect on native species that are colonizing those river bars and potentially prevent -- you know, have effects -- have a potential to prevent native species from establishing.

The good news is at least that, you know, both of these species were mostly found at trace levels or low -- you know, one to five percent -- cover values during the 2013 survey.

The Chulitna Corridor -- these are some proposed modifications.

The Chulitna Corridor was eliminated from the study area. And the Denali East Corridor option

was added as an additional, alternative north-south corridor for transmission line and the road access to the dam site.

So we're up to complete the study. We will conduct some field surveys in the next study year in disturbed areas in and near the project area that were not surveyed in 2013. Use similar kinds of assessment parameters to look at abundance, percent cover and/or stem-counts of all the species found.

We would, you know, target portions of the Denali Highway, near the Denali East Corridor option, Stephan Lake and High Lake Lodge, Gold Creek Camp, and selected portions of the Alaska Railroad right-of-way. So those were areas that we weren't able to capture in 2013.

We would, of course -- similar to 2000 -- 2013, we would review the database and current imagery, to help guide survey efforts.

And when the project is complete, then we -- survey data has been completed, we would conduct our ecological risk assessment for the invasive plant species that we found, to see if there are any changes from -- you know, in these new areas that we will be surveying.

And if anybody has any questions, I am

happy to, hopefully, answer them.

MS. LONG: Hi. This is Becky Long from SRC.

MS. KIDD: Uh-huh.

MS. LONG: I think that -- should I go ahead?

MR. GILBERT: Yes, go ahead.

MS. LONG: Okay. I think that this study -- you guys have done a really good job. And it's definitely good news that based on the data you have now, that the overall current risk assessment is very low.

And, you know, the -- what you guys talk about in your study about how invasives get established, I actually, you know, have -- I agree -- I find -- I had found that to be true, based on my long experience of living in the Bush.

And one of the reasons why I care about this study is because I want to make sure that invasives don't get established so that if the project goes ahead, the dam project goes ahead, that -- and invasives, the risk is higher, that the use of herbicides is not considered to solve the existence of what is considered invasive.

Our state pesticide laws certainly are not

very good about protecting human, wildlife, fish, or environmental health. And those pesticide regulations need reforming. So I hope that we never have to resort to using that as a way to solve the invasive problem.

And looking ahead to your second year of study, what you said about where you guys are going to go and look at -- look at the lodges and the Talkeetna Airport, I was just wondering, what about the -- around the dam site where there has been significant licensing study activity? Or is there -- or maybe 11.6 or one of the others, I just wonder if you are tracking that.

And just one more thing. I hope this study will encourage, if this project moves forward, best management practices to prevent invasives from coming in.

MS. KIDD: Yeah. I can't speak to the dam site area, because I am not quite sure -- I guess you are just talking about, as part of this overall project, you know, activities that have been conducted there that, you know, is very -- you had a concern that -- that maybe -- that maybe invasives might have been brought in as part of the studies? Or I wasn't really sure what you were asking.

MS. LONG: Well, there's been a lot of transportation back and forth, equipment, you know, looking at the dam site, you know, drilling and all that kind of thing. A lot of people back and forth, probably looking at where they are going to put the airport and stuff. And, you know, I just wonder if -- if anything had a chance to get established, if that would be looked at.

MS. KIDD: Oh, I see.

Okay. Well, yeah, it would certainly be something that we should make note of, if that seems like there are certain areas beyond camps and things that have already -- that we -- already are on our radar for being sort of potential vectors, you know, for invasive plants.

And certainly one of the reasons why the study is being -- was being conducted is to guide development efforts going forward. Yes, that best management practice can be developed to prevent invasives, yeah, from entering the project area as part of construction. So that certainly is one of the goals of the project.

MS. McGREGOR: Did that answer your question, Becky?

MS. LONG: Yes, it did. Thank you very

much.

MS. WOLFF: This is Whitney Wolff. I just want to make sure I understood the answer to Becky's question.

So it sounds like in your next year of studies you would be looking at areas such as heli-landing sites or drill rig sites right at the -- the sites that are known study-area-use locations. Is that on the radar?

I would just say, as a person who is -- works at the airport, we have got a huge hawkweed problem. And that's definitely a known risk factor.

So I was just curious if you did answer Becky that the study area, heli-sites, and such are -- are planning -- that you do plan on including those in the next year of study.

MS. KIDD: Well, I guess I -- you know, I wasn't really aware of how extensive that disturbance was, in terms of all these different areas. But I guess I would -- I will work with AEA to identify where those -- you know, what extent -- extension of -- extent of those were -- just services are.

You know, one thing we did notice from the invasive plant survey initially was that substrate really is important. So just sort of a surface

disturbance of the organics, those aren't really particularly habitats that invasives do like to colonize. They do like kind of well-drained, you know, kind of more gravelly substrates. But there certainly could be heli-landings that are definitely associated with that.

So, you know, not having a list of what those locations are right now, I don't -- I can't really say that, yes, we -- we, you know, incorporated that into our future survey efforts. But I certainly will make note of that, you know, that that might be a concern; that if there are -- there have been, you know, heli-pads or more significant disturbances associated with drilling activities, that that would be something we probably should consider.

MS. McGREGOR: I know what you are saying. And with respect to aquatic invasive species, I know the fisheries crews would completely disinfect their gear. They disinfect things going between drainages.

I know Alaska changed their laws for wading boots, so nobody had felt -- you know, bottom-wading boots anymore. And they would dry out their equipment, as well.

MS. IVES: Oh, that's awesome. I am really

glad you mentioned that, Betsy.

MR. SCHICK: This is Terry Schick.

I think we also indicated that the final selection of sites to be surveyed for invasives would be -- you know, there would be a technical working group that would provide input into that process. And they have already provided some input, which is reflected in those potential sites to survey there, one of those being the Alaska Railroad Corridor.

So we would evaluate again some of these additional sites that are actually in the study area that potentially could be harboring invasives now. We'd evaluate that before making a final selection of survey sites in the next study year.

Any other questions?

MR. GILBERT: Oh. Yeah. Mike Wood?

MR. WOOD: Hi there. My question and observation is in line with Whitney's, as well. There's been a huge orange hawkweed explosion at the airport, and it's been following the tracks for the last few years. So we are witnessing it further and further up the Chase Trail. So I would keep an eye on orange hawkweed. Especially with all the helicopter traffic in and out of the airport, it's right in the patch of orange hawkweed.

The other -- the other thing I was asking about or thinking about is, I know in the Susitna Valley we are really worried about the aquatic plant Elodea. And it's been -- creates great habitat for northern pike, which is another invasive species. And I think it's important to be sure that that certainly doesn't spread. It's creating a huge problem down lower in the Susitna, and we are trying hard right now to eradicate it.

And so it may not only be felt waders, but it may be boats that are being transported into the Upper River for -- that came from the Kenai or another outside source that are being put in the Susitna River to do studies and transport. It's float plane landings, also, and -- as well as just equipment.

So we definitely do not want to, you know, encourage pike habitat, even if that's what we might potentially be doing. We don't want the Elodea there.

Thank you.

MS. KIDD: I know. I appreciate that feedback. I mean, certainly here in the Fairbanks area, you know, which is quite a bit farther -- you know, is not a place you necessarily would think

something like a -- you know, that an aquarium plant could take root, but it's very much taking hold in our sloughs here in Fairbanks. And so there is a really strong concerted effort to remove it. So I appreciate that concern, and we would definitely want to -- got to make sure that that's -- doesn't make its way into the project area.

MR. GILBERT: Okay. Good discussion.

Any -- anything else for Janet or Terry or Sue?

MS. LONG: This is Becky Long again. Although I do want to say that orange hawkweed, it -- I mean, I have been watching it near the area where I exist and live, not out in the Bush, but in town, and it really does like well-drained sunny soil. So it's not like somebody taking off from the Talkeetna Airport with a orange hawkweed on its whatever and it drops in the woods, that it's going to create a problem. But it -- you know, landing at disturbed areas, et cetera, is where it gets a start.

MR. GILBERT: Good.

MR. SCHICK: Yeah, that's a good point. I think best management practices will be critically important in the construction phase when those sorts of habitats become developed, when clearing happens

or construction, for example.

MS. KIDD: Yeah. When you develop an area and then you open it up to the sun, that's really when you find it. It gets established. And, I mean, I am anti-herbicide use. But even herbicides, I don't think, really can solve the problem of hawkweed. It's a very tenacious plant.

MR. SCHICK: Well, good. Thanks for those comments.

MR. GILBERT: Yeah. Good comments.

Okay. Well, then, I think we have concluded today.

MS. LONG: Okay. Before you conclude --

MR. GILBERT: Sure.

MS. LONG: -- I have a quick follow-up, just -- not about (indiscernible - telephonic speech) 11.8 or 9, but a quick follow-up to where Betsy sent me prior (indiscernible - telephonic speech), regarding 11.5 and 11.7.

MR. GILBERT: Okay. Sure.

MS. LONG: I want to thank her for directing me to that 7.1.2. I found that. And just while I was in -- I noticed under 7.2 schedule for both 11.5 and 11.7, there was a reference in there to the Denali East Corridor having imagery graphs. It

said it was going to be addressed in 2014, and I had (indiscernible - telephonic speech) and I didn't see any. So I don't know if you guys have follow-up on that imagery graph of those two studies listed under 7.2 schedule, both 11.5 and 11.7.

MS. McGREGOR: Yes, we did.

MS. LONG: It would have been regarding the Denali East Corridor.

MS. McGREGOR: We did. We gathered that aerial imagery, and these guys are using it in 11.5 and 11.7. And I believe the recreation folks were using it, as well, to map trails. And the engineers will be using it also.

MS. LONG: Okay. Thank you.

MS. McGREGOR: You are welcome.

MR. GILBERT: Good. Thanks.

Any other comments for the day?

Okay. Wow, good.

Well, again, for those interested, tomorrow we start again at 8:30 here.

Anything else?

Betsy?

MS. McGREGOR: No, I just wanted to thank everybody for their participation. I think it was a good meeting. I think our -- our wildlife and

botanists are -- you know, have been doing excellent work, which I think you could tell from the studies and what they have presented.

MR. GILBERT: Yeah. Excellent presentations, for sure.

Anybody else?

MS. LINGENFELTER: So this is Heide from Ahtna. And I was wondering if an agenda for tomorrow's meetings is available yet.

MR. GILBERT: Yes. The agenda has been posted. It's on the website. And the presentations are all there, too, now.

MS. LINGENFELTER: Thank you.

MS. WOLFF: a different form, Heide. I had trouble finding it, too. This is Whitney. It's not listed like the earlier studies were. It's just grouped (indiscernible - telephonic speech) with the presentations.

MR. GILBERT: It should be the top of the Listings for the day-- and the presentations follow.

UNIDENTIFIED SPEAKER: (Indiscernible - lowered voice).

MR. GILBERT: Yup. It's there.

MS. LINGENFELTER: Thanks, Kirby.

MR. GILBERT: Okay. It's all on one page

for tomorrow, but there is a lot to cover. So we will start at 8:30 and -- and have at it for everybody, so --

All right.Well, thank you very much. 53:24:41

(Off record)

SESSION RECESSED

C E R T I F I C A T E

UNITED STATES OF AMERICA)
)ss.
STATE OF ALASKA)

I, GAIL RUTH PECKHAM, RPR, do hereby certify:

That the foregoing pages numbered 5 through 223 contain a true, accurate and complete transcript of the Initial Study Report (ISR) Meeting of March 29, 2016, taken before Sunny Morrison and Sydney Hamilton, court reporters, and transcribed by me, from a copy of the electronic sound recording, to the best of my knowledge and ability.

_____
Gail Ruth Peckham, Transcriptionist