From: Kilbride, kilb
To: BrownScott, Jennifer
Cc: Loverti, Vanessa
Subject: Re: [EXTERNAL] RE: Next meeting of Dungeness Shellfish Farm workgroup
Date: Monday, May 10, 2021 6:10:28 AM

In my last email, I meant to state six, 0.5-acre plots rather than 4 that could be pseudo replicates for the survey.   The graphic with the dashed boundary of the project area surrounding the 50-acre proposed aquaculture operation, including all or most of the 0.5-acre sampling units, illustrates this issue.

And, below are the basic assumptions of ANOVA that's identified for the statistical analysis of the bird data in the draft monitoring plan. I've bolded #3 and #4 that relate to pseudo replication.

To use ANOVA, the following assumptions would need to be met:

1. Each group sample is drawn from a normally distributed population

2. All populations have a common variance

3. **All samples are drawn independently of each other**

4. **Within each sample, the observations are sampled randomly and independently of each other**

Moreover, the selection of the control plots was likely biased in nature. This means they were likely not established in an unbiased (probability-based) manner. I suspect the selection of the two control plots was driven by opportunity (readily accessible areas and/or available time). If so, then this results in what's called convenience sampling that does not lend itself to statistical analysis.

Kevin Kilbride
US Fish and Wildlife Service
I&M Coordinator
Columbia Pacific Northwest (R9) & Pacific Islands (R12)
Branch of Refuge Biology
911 NE 11th Avenue
Portland, OR 97232
(503) 231-6176 (Phone)

From: Kilbride, kilb <kevin_kilbride@fws.gov>
Sent: Saturday, May 8, 2021 8:33 AM
To: BrownScott, Jennifer <jennifer_brownScott@fws.gov>
Cc: Loverti, Vanessa <vanessa_loverti@fws.gov>
Subject: Fw: [EXTERNAL] RE: Next meeting of Dungeness Shellfish Farm workgroup

Hi, Jennifer:

The fundamental sampling design issue we discussed yesterday is applicable to this draft of the monitoring plan. Specifically, the four, 0.5-acre plots within one site are pseudoreplicates (see italic text below).

Pseudoreplication refers to the case when treatments are not replicated or when the replicates are not statistically independent. It is a process of artificially inflating the number of samples or replicates. As a result, statistical tests performed on the data are rendered invalid.

And, then there's the related issue regarding the size of the sample units themselves not being reflective of the issue to be addressed from the survey. Specifically, potential disturbance from the proposed oyster farming to migratory birds cannot adequately be evalated considering the totality of the aquaculture operation and how those activities could potentially impact how migratory birds use of this location to meet their life-history requirements (e.g., foraging, loafing, roosting). For example, as we discussed yesterday, brant use this location to meet all their life-history needs based upon available scientific information and best professional judgment.

Moreover, providing us with a draft monitoring plan during the late afternoon on Friday (yesterday) with an early afternoon meeting on Monday is not consistent with the spirit of openly seeking feedback in my opinion. There needs to be a reasonable amount of time to review/assess a proposal in advance of a meeting in order to have a robust discussion about it. Plus, stating this version should be considered as a final is not necessarily welcoming a review from FWS in my opinion.

Kevin Kilbride
US Fish and Wildlife Service
I&M Coordinator
Columbia Pacific Northwest (R9) & Pacific Islands (R12)
Branch of Refuge Biology
911 NE 11th Avenue
Portland, OR 97232
(503) 231-6176 (Phone)

From: Elizabeth Tobin <etobin@jamestowntribe.org>
Sent: Friday, May 7, 2021 3:06 PM
To: Sissi Bruch <sbruch@jamestowntribe.org>; De La Cruz, Susan E <sdelacruz@usgs.gov>;
BrownScott, Jennifer <jennifer_brownScott@fws.gov>; Loverti, Vanessa <vanessa_loverti@fws.gov>;
Kilbride, kilb <kevin_kilbride@fws.gov>; Hansi Hals <hhals@jamestowntribe.org>
Subject: [EXTERNAL] RE: Next meeting of Dungeness Shellfish Farm workgroup

Hello All,

Attached please find a final draft of the Tribe's Avian Monitoring Plan for the Dungeness Bay Oyster Farm for your review. Please note that this version of the Monitoring Plan has incorporated initial feedback from Susan De La Cruz (who may join our call pending availability) and Bob Boekelheide with the Olympic Peninsula Audubon Society.

As I mentioned during our last meeting, the draft Monitoring Plan has been submitted to USACE staff and they have responded favorably to what we have prepared. Therefore, we believe that the attached version is getting pretty close to what the final plan would look like. If you have any final comments or considerations we will be happy to received them on Monday. I look forward to our discussion.

Have a wonderful weekend,
Liz

Elizabeth Tobin
Shellfish Program Manager
Jamestown S'Klallam Tribe
office: 360-681-4656
cell: 360-912-2961
email:etobin@jamestowntribe.org

-----Original Appointment-----
From: Sissi Bruch <sbruch@jamestowntribe.org>
Sent: Tuesday, April 20, 2021 1:13 PM
To: De La Cruz, Susan E; BrownScott, Jennifer; Loverti, Vanessa; Kilbride, kilb; Hansi Hals; Elizabeth Tobin

Subject: Next meeting of Dungeness Shellfish Farm workgroup
When: Monday, May 10, 2021 1:00 PM-3:00 PM (UTC-08:00) Pacific Time (US & Canada).
Where: Microsoft Teams Meeting

Hi All,

Our next meeting is scheduled for May 10th at 1:00pm. Susan De La Cruz will be joining us. Thank you all for your help with our monitoring plan.

Sissi

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