From: Teresa Mongillo - NOAA Federal <teresa.mongillo@noaa.gov>
Sent: Friday, June 7, 2019 3:09 PM
To: Penny Ruvelas - NOAA Federal
Cc: Dan Lawson - NOAA Federal; Lynne Barre
Subject: Fwd: SRKW spatial data and Hanson et al 2018 report

Hi Penny,

I'm sending you some of the work I'm doing for the SRKW ad hoc workgroup that you may find helpful or useful when thinking about SRKW coastal distribution and occurrence off CA. One request from the workgroup was to have sightings data, acoustic recorder data, and satellite tag data organized by month and fisheries management areas (I attached a map of these areas if you don't have one handy). See email chain below for the back and forth on this request. You may find the Hanson et al. 2018 paper I attached is the most helpful as it integrates these data but unfortunately we cannot refine the data anymore than that, although I attempt to do so in the spreadsheet as requested (also attached "Spatial use data"). I just wanted this to be on your radar and can discuss this more when I return from A/L but until then, you can have this in your back pocket if it comes up.

Cheers,
Teresa

P.S. I also attached a couple other Hanson references that are mentioned in the email chain for future fun reading.

---------- Forwarded message ---------
From: **Eric Ward - NOAA Federal** <eric.ward@noaa.gov>
Date: Fri, Jun 7, 2019 at 1:52 PM
Subject: Re: SRKW spatial data and Hanson et al 2018 report
To: Kormos, Brett@Wildlife <Brett.Kormos@wildlife.ca.gov>
Cc: Teresa Mongillo - NOAA Federal <teresa.mongillo@noaa.gov>, hap.leon@gmail.com <hap.leon@gmail.com>, Adicks, Kyle K (DFW) <Vincent.Adicks@dfw.wa.gov>, Ashton Harp <aharp@nwifc.org>, Chris Kern <J.CHRIS.Kern@state.or.us>, Chris Kozfkay <christine.kozfkay@idfg.idaho.gov>, Craig Foster <Craig.A.Foster@state.or.us>, Dapp, Derek R (DFW) <Derek.Dapp@dfw.wa.gov>, Meyers, Erica@Wildlife <Erica.Meyers@wildlife.ca.gov>, Jeromy Jording - NOAA Federal <jeromy.jording@noaa.gov>, Lance Hebdon <lance.hebdon@idfg.idaho.gov>, LCDR Scott McGrew <scott.h.mcgrew@uscg.mil>, melvinjohn Ashue <melvinjohn.ashue@hohtribe-nsn.org>, Mike Matylewich <matm@critfc.org>, Nate Tyler <nate.tyler@makah.com>, Patrick DePoe <patrick.depoe@makah.com>, Phil Anderson <pmand001@comcast.net>, Robin Ehlke - NOAA Affiliate <Robin.Ehlke@noaa.gov>, Susan Bishop - NOAA Federal <susan.bishop@noaa.gov>, Tyler Gross <tyler.gross@quileutetribe.com>, Tyler Jurasin <tjurasin@quinault.org>, Will Satterthwaite <will.satterthwaite@noaa.gov>

Following up on the last email, here's the month/area splits for each of the 3 coastal whales. As I said in the last email, unfortunately we can't infer anything about seasonal changes across years from these 3 deployments.

Eric

On Thu, Jun 6, 2019 at 5:05 PM Eric Ward - NOAA Federal <eric.ward@noaa.gov> wrote:

Hi Brett - I'll take a crack at these.

Satellite tag data:
To be clear, there's 3 whales in 3 separate years (2013, '15, '16 -- details in my presentation # 1), and these tags were generally on the animals Jan - Apr to estimate winter distribution. We've aggregated the maps in the Hanson et al. report and others because while there's a natural tendency to want to say something about variability across years, with a n = 3, that's a bad idea. I can summarize that data for those animals as long as everyone's on the same page about the limitations -- and a reminder that these are winter /early spring distributions (which really doesn't overlap in time with the fisheries we're talking about)

Recorder data:
I think the main limitation here has been that the one person from the NWFSC that has the entire dataset > 2011 has been in the field, so I think it's unlikely we'll get exactly what you want in the next couple weeks. I guess from my perspective, summarizing the detections by month/area is a bit misleading, and I'd rather produce a table corrected for effort. Spatially, more recorders have been deployed in the north (to increase detections, but also this was partially funded with Navy funds). There's also quite a lot of variability year to year in (1) how long the recorders are actually in the water, (2) how long they're actually recording (a number of them have had hard drives fail), and (3) the sampling rate (or seconds/minute where the recorder is turned on). I think it's more useful to calculate detections corrected for effort (e.g. detections per recorder - hour). These issues are also reviewed in the Methods section of Hanson et al. 2013.

My other point about the recorder data is that in the Hanson et al. 2013 paper, we explored a range of models including letting the seasonal distribution vary by year (month:year interaction). There's little support for that though, and more support for a model where those terms are additive (occurrence varies by season, and by year, but the seasonal distribution doesn't vary by year).

Hope this helps clarify things -

Eric

On Thu, Jun 6, 2019 at 2:58 PM Kormos, Brett@Wildlife <Brett.Kormos@wildlife.ca.gov> wrote:

Thanks Teresa,

First couple of questions on the spreadsheet, perhaps of many.

For the Acoustic Recorder data post 2011, is it possible to get this data stratified by *month* and area? The data shown in Table 3 of that worksheet shows number of days with detections (not really what I am looking for but closer) but Table 4 just shows a rate which is not very informative for evaluation of time-area overlap with salmon. You have found a way (not sure how at first glance) to show the pre 2011 data in a month to month format but not post 2011.

For the satellite tag data is it possible to get that data by year? It seems to have been aggregated across 5 study years. It is essentially shown again as a rate of occurrence or fraction of time but I think I understand why that can't be interpreted or shown in another more useful way.

Last, I would really like to see this data tabulated for each year where data exist as opposed to summed, as shown in the combined tab. Is that possible? Part of what we need to be able to do here is evaluate the frequency with which the whales appear in certain areas. Basically where (management zone), when (month and year), and how often (individual years). This is part why the maps showing a general/nebulous range were not helpful in evaluating how Council managed stocks overlap in time and space with whale distribution. Evaluating the priority stocks list effectively would be much improved with more granularity from the existing distribution data.

Thanks again for putting this initial look together. I hope that we can refine it a little bit to increase the utility.

Best, Brett

From: Teresa Mongillo - NOAA Federal <teresa.mongillo@noaa.gov>
Sent: Thursday, June 06, 2019 2:08 PM
To: hap.leon@gmail.com; Adicks, Kyle K (DFW) <Vincent.Adicks@dfw.wa.gov>; Ashton Harp <aharp@nwifc.org>; Kormos, Brett@Wildlife <Brett.Kormos@wildlife.ca.gov>; Chris Kern <J.CHRIS.Kern@state.or.us>; Chris Kozfkay <christine.kozfkay@idfg.idaho.gov>; Craig Foster <Craig.A.Foster@state.or.us>; Dapp, Derek R (DFW) <Derek.Dapp@dfw.wa.gov>; Meyers, Erica@Wildlife <Erica.Meyers@wildlife.ca.gov>; Jeromy Jording - NOAA Federal <jeromy.jording@noaa.gov>; Lance Hebdon <lance.hebdon@idfg.idaho.gov>; LCDR Scott McGrew <scott.h.mcgrew@uscg.mil>; melvinjohn Ashue <melvinjohn.ashue@hohtribe-nsn.org>; Mike Matylewich <matm@critfc.org>; Nate Tyler <nate.tyler@makah.com>; Patrick DePoe <patrick.depoe@makah.com>; Phil Anderson <pmand001@comcast.net>; Robin Ehlke - NOAA Affiliate <Robin.Ehlke@noaa.gov>; Susan Bishop - NOAA Federal <susan.bishop@noaa.gov>; Tyler Gross <tyler.gross@quileutetribe.com>; Tyler Jurasin <tjurasin@quinault.org>; Will Satterthwaite <will.satterthwaite@noaa.gov>
Cc: Eric Ward - NOAA Federal <eric.ward@noaa.gov>
Subject: SRKW spatial data and Hanson et al 2018 report

Hi all,

Eric and I were tasked with distributing coastal spatial / sighting data. I've attached 2 documents to this email, the first is the Hanson et al. 2018 report that Eric touched on in his presentation that integrates these data sources to model the occurrence of SRKWs along the coast. We also used information from Hanson et al. 2013 that you should have from the supporting documents. These reports along with Eric's presentation are very helpful references to look at to avoid duplicating existing effort. Because the state space model involved integrating data sets, they were restricted to Jan - April (for Ks and Ls). One main takeaway is that each method alone has limitations (see Eric's distribution presentation and report for details) and that integrating these data helps fill certain data gaps.

Also attached is an excel spreadsheet that provides the available data (satellite tag data, acoustic recorder data, and confirmed opportunistic sighting data) by month and management area. There are 4 worksheet tabs, the first is "Combined"worksheet that provides the data collected in each month by area. The remaining 3 tabs provides more information on each data source (Confirmed sightings, Acoustic recorders, and Sat tag). I also pasted a few tables and figures into these spreadsheets that were pulled from the referenced reports.

Cheers,

Teresa

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