

From: [Mark A Haroldson](#)
To: [Shoemaker, Rebecca](#)
Subject: Re: convoluted question
Date: Wednesday, September 26, 2012 11:26:59 PM
Attachments: [Binomial Estimate of Female Sample Size.xls](#)

Hey Rebecca, Hows it going yourself. I'm very busy, and maybe losing it a little from time to time. But so it goes. Currently down in Cody working with the WY guys on products for the WBP synthesis. Sorry I have not commented of the CS. I felt near the end that my comments on various iterations of the demographic section, for whatever reason, went unheard, unheeded, unused. And any additional comments of mine would have been much the same as my previous comments. Anyhow on to your question.

I have attached a simple spreadsheet which may help. It was based loosely on female survival rates from the GYE, and monitoring 25 females a year. So, given that lambda is mostly driven by females survival (about 74% of the proportional contribution to lambda come from female survival), about how many years of monitoring do you need to acquire before you narrow the CIs on survival enough to produce a reasonable estimate for lambda. Using a lower CI of 0.91 as a goal, you can see we need to accumulate data on 25 females a year for about 6 years to achieve our goal. So what we are really after is the accumulation of enough data (i.e. big sample size) to narrow the CIs for female survival, which is the primary driver of lambda. Really, all the individual estimates for each of the vital rates (M_x , S_{coy} , $S_{yearlings}$, $S_{ind F}$) are pooled across the time period of interest to produce mean rates with their associate uncertainties, which are then use to estimate lambda with it's uncertainty (or CI). You could produce annual estimate for each of the vital rates, like survivorship, if you wanted to show the annual variation in a rate.

Hope this help.

Sincerely,

Mark

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From: "Shoemaker, Rebecca" <rebecca.shoemaker@cfc.umn.edu>
To: "Mark A Haroldson (mharoldson@usgs.gov)" <mharoldson@usgs.gov>
Date: 09/26/2012 16:49
Subject: convoluted question

Hey Mark,
How's it going? I just left you a voicemail and here's my attempt at asking you a very convoluted question.

Do you know of a reference or a simple explanation of why it's necessary to obtain at least 6 consecutive years of data to estimate vital rates in grizzly bear populations. I know it's related to variation in grizzly bear survival between years and sexes, relatively long life spans, slow reproductive rates, etc. But is there a simple, layman's way to say this? Also, what do you call that value? It's not an average in the true sense of the word (meaning values of survival are calculated independently each successive year, then averaged over the 6 year time period). This is related to KMac's (mis)understanding of how survival is calculated. He thinks it's calculated each year, then averaged over a 6 year time period. If you can answer my questions via email, great! If not, feel free to give me a call.

hope all's well over there...
thanks, rebecca

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