Malin Pinsky <malin.pinsky@gmail.com>

Vessel correction factors for West Coast Triennial survey?

Bob Lauth <bob.lauth@noaa.gov> **Tue, Mar 6, 2012 at 2:32 PM**
To: "Malin L. Pinsky" <pinsky@princeton.edu>

Hi Malin,

I am not the expert on the topic of vessel effects and fishing power corrections (FPC). For the Bering Sea survey, we used an FPC until 2006, and then decided to discontinue its use because of concerns that it was not correcting for a vessel effect but rather was increasing the overall error in CPUE estimates. Historically, two vessels have been used to conduct the EBS survey, and fishing power corrections (FPC) were applied when statistical differences of mean CPUE values were detected between the two vessels (Kappenman 1992). The underlying assumption for using an FPC was that one survey vessel was less efficient at sampling than the other survey vessel and that systematic error caused by vessel effects warranted correction. This may have actually been the case during the earlier years when we didn't pay as close attention to standardization between vessels and in vessel charter specifications, but since the early 90's we have placed great emphasis on standardizing gear and procedures among the different charter vessels used in our surveys. Concerns about using an FPC were raised by a study showing that overall error in CPUE estimates can actually increase unless there are substantial differences between vessels within a (Munro 1998). Survey gear research done by our group and real-time monitoring and data collection of trawl and vessel performance has increased awareness and helped reduce possible systematic errors associated with “vessel effects”. The same would hold true for the West Cost survey while we conducted it. Our group is continuing to investigate sources of systematic error and devising methods for minimizing systematic error and bias in area-swept calculations

One reason why the overall error of FPC-adjusted CPUE estimates was probably artificially high was nonrandom selection of stations from alternate columns for calculating the FPC. Without random selection of stations or actual side-by-side tows, it is possible that observed differences between vessels are actually real differences in fish distribution and abundance. For example, the location and timing of the cold pool on the eastern Bering Sea shelf has a dramatic effect on fish distribution, so if one vessel is sampling a column inside the cold pool and the other is sampling in the adjacent column outside the cold pool, differences in catch rates between the two vessels may be due to the effect of the cold pool on fish distribution rather than a vessel-effect.
Since the west coast survey was taken over by the Northwest Fisheries Science Center, the trawl gear and methods have changed, and there has been additional work done on investigating "vessel effects" which I believe are inclusive of different gear types and perhaps slightly different procedures (E.g., Helser et al. 2004 and Cooper et al. 2004).

Attached are some of the papers mentioned above.

I hope that helps!

~Bob

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4 attachments

Cooper et al.2004.pdf
128K

munro1998.pdf
717K

helser2004.pdf
495K

Kapp1992.pdf
637K