

{rokbox title=|Performance of Baited Underwater Video: Does It Underestimate Abundance at High Population Densities? :: Photo: David Díaz (ICM-CSIC/COB-IEO)|
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Ben Stobart, David Díaz, Federico Álvarez, Cristina Alonso, Sandra Mallol, Raquel Goñi, 2015.

[Performance of Baited Underwater Video: Does It Underestimate Abundance at High Population Densities?](#)

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Abstract: Video survey techniques are now commonly used to estimate animal abundance under the assumption that estimates relate to true abundance, a key property needed to make video a valid survey tool. Using the spiny lobster *Palinurus elephas* as our model organism, we evaluate the effectiveness of baited underwater video (BUV) for estimating abundance in areas with widely different population density. We test three BUV abundance metrics and compare the results with an independently obtained abundance index from trammel-net surveys (Trammel). Video metrics used to estimate relative abundance include a value for total number of individuals per recording (TotN), the traditional maximum number of fish observed in a single video frame (MaxN), and the recently suggested alternative, the average of the mean MaxN from 5-minute periods throughout the duration of the recording (MeanN). This is the first video study of a wild population to include an estimate for TotN. Comparison of TotN with the other two BUV relative abundance metrics demonstrates that both of the latter lack resolution at high population densities. In spite of this, the three BUV metrics tested, as well as the independent estimate Trammel, distinguished high density areas from low density areas. Thus they could all be used to identify areas of differing population density, but MaxN and MeanN would not be appropriate metrics for studies aimed at documenting increases in abundance, such as those conducted to assess marine protected area effectiveness, as they are prone to sampling saturation. We also demonstrate that time of first arrival (T1) is highly correlated with all of the abundance indices; suggesting T1 may be a potentially useful index of abundance. However, these relationships require further investigation as our data suggests T1 may not adequately represent lobster abundance in areas of high density..

Keywords: lobsters, marine fish, population density, conservations science, polynomials, video recording, cameras, habitats