

# Early life history and benthic settlement of king crabs in nearshore St. Paul Island habitats and investigation of bottlenecks in recruitment

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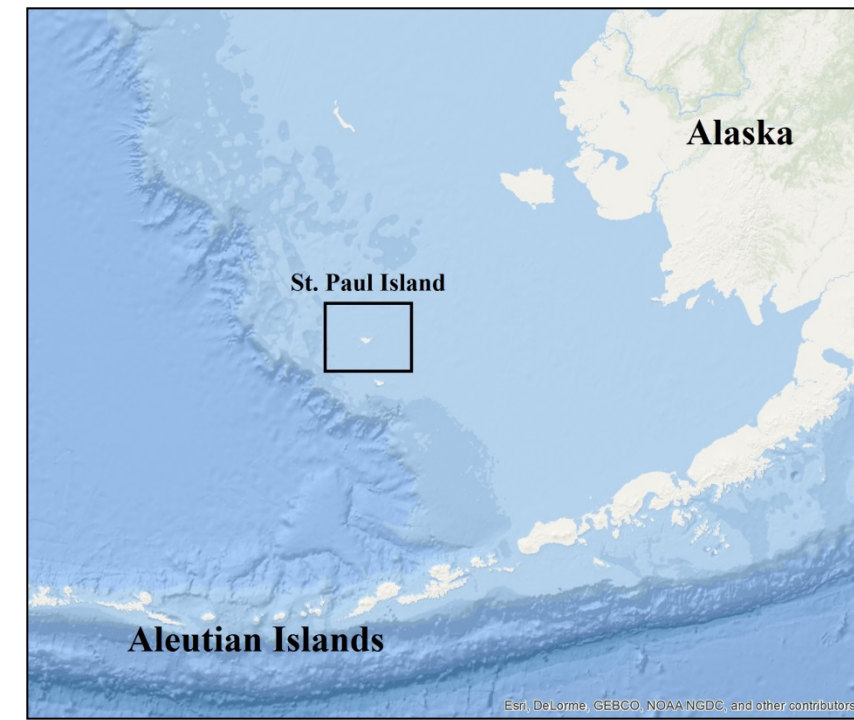


Fig. 1) Alaska region map with Saint Paul Island location inset.

## Introduction

We are studying blue and red king crab (BKC, RKC) early life history to identify potential bottlenecks in larval settlement and early juvenile phase BKC recruitment to the benthos. Field sampling in 2017 quantified juvenile abundance at new and historically sampled sites surrounding Saint Paul Island, Alaska (Fig. 1). Historical sampling in 1983-1984 was conducted by Armstrong et al. (1987) prior to Pribilof Islands BKC stock failure.

## Juvenile Crab Collection Methods



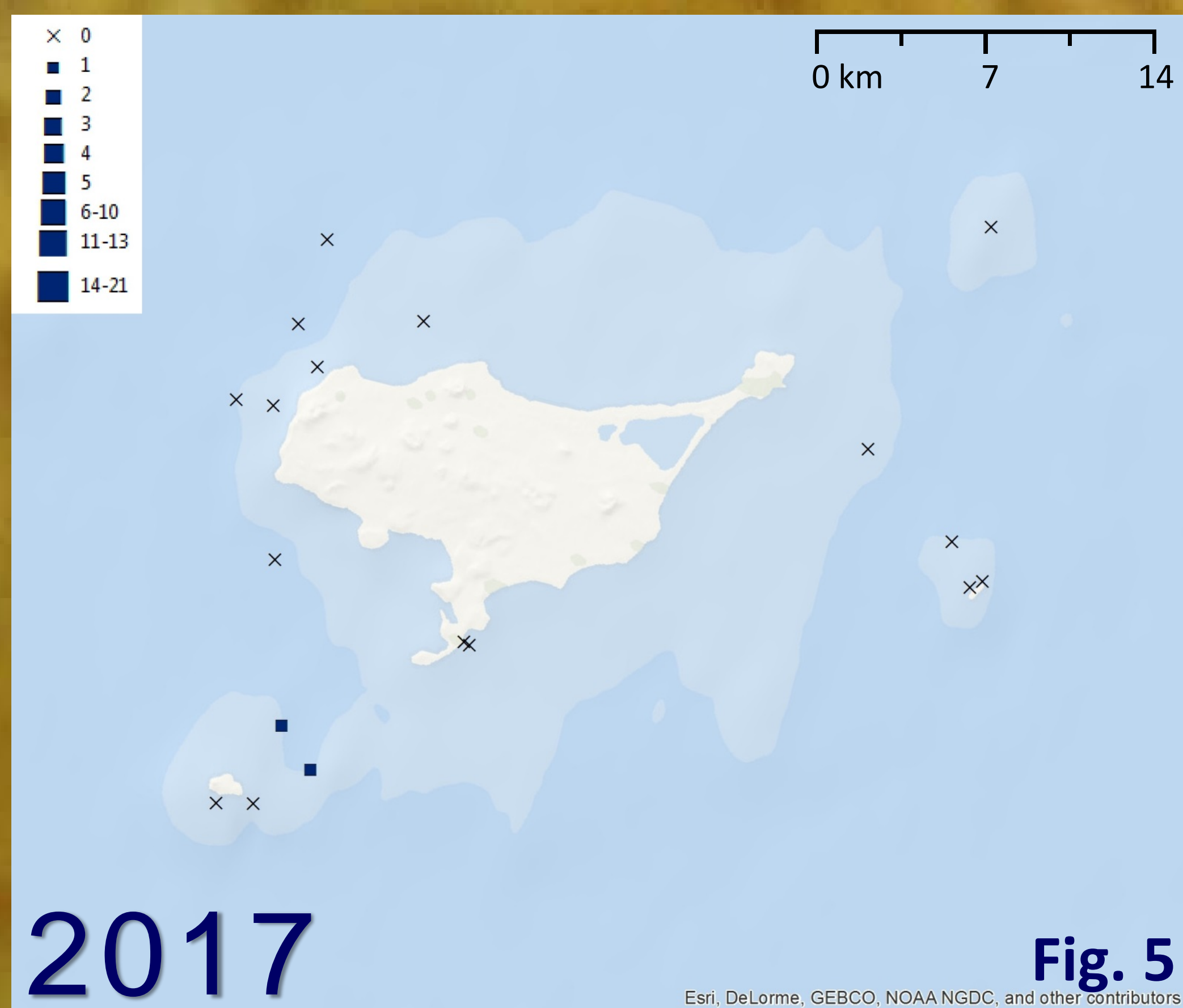
Fig. 2) Eighty-seven glaucothoe collector bags were used in 2017. Bags were deployed an average of 67 days, late-May to early-August.



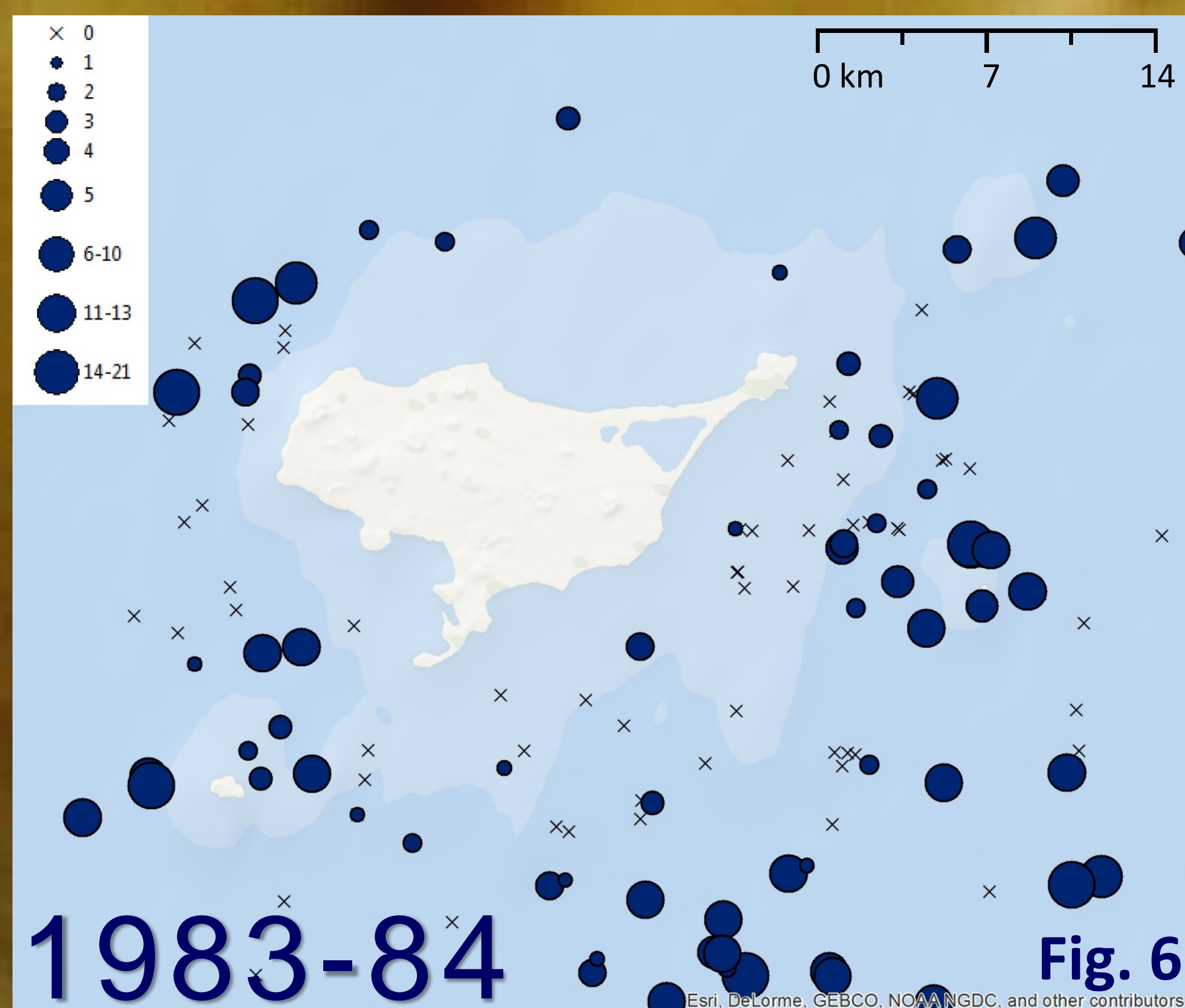
Fig. 3) An example of a Rock Dredge type bottom trawl net used in 1983-84 study to quantify crab and assess bottom habitat.



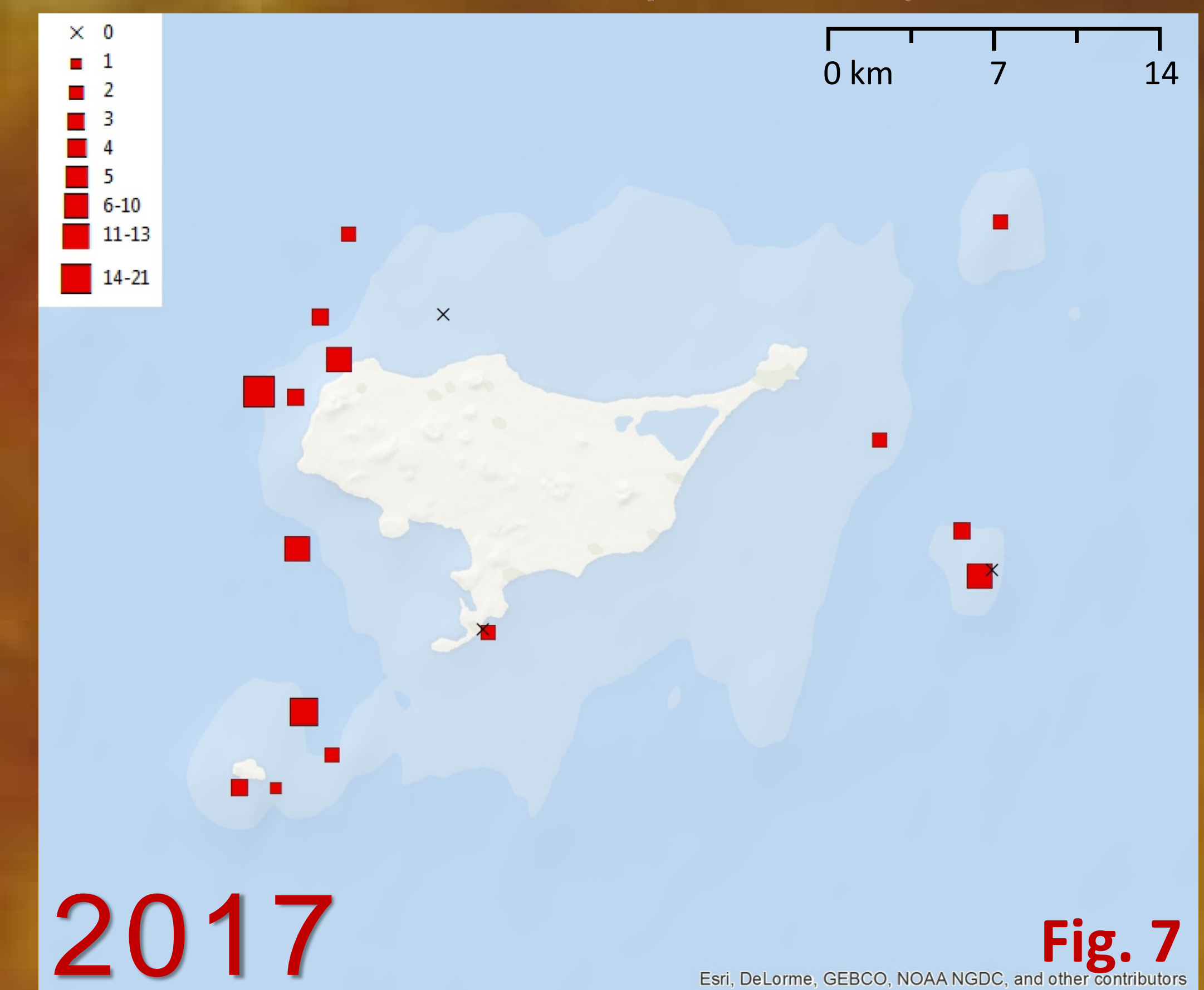
Fig. 4) Scientists Jared Weems and Alex Filardo in 2017.



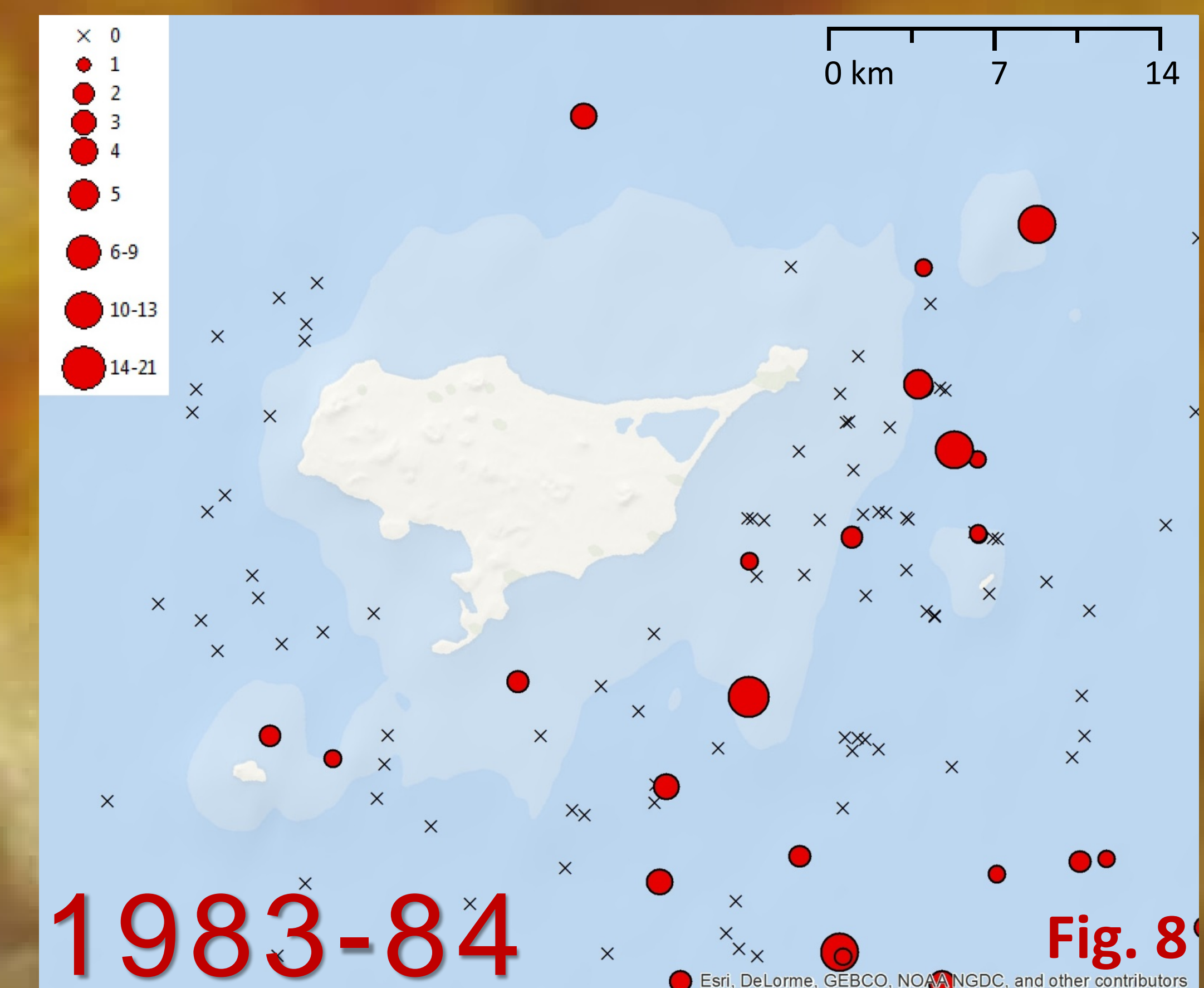
2017 Fig. 5  
Esri, DeLorme, GEBCO, NOAA NGDC, and other contributors



1983-84 Fig. 6  
Esri, DeLorme, GEBCO, NOAA NGDC, and other contributors



2017 Fig. 7  
Esri, DeLorme, GEBCO, NOAA NGDC, and other contributors



1983-84 Fig. 8  
Esri, DeLorme, GEBCO, NOAA NGDC, and other contributors

## Results

BKC and RKC of length 1-20 mm were quantified.

1. Current supply of juvenile BKC (n=2; Fig. 5) accounts for 2% of 2017 king crab catch.
2. Past supply of juvenile BKC (n=3,005; Fig. 6) accounts for 97% of 1983-84 king crab catch.
3. Current and past supply of juvenile RKC is similar, n=80 and n=87, respectively (Figs. 7, 8).
4. Percent contribution of RKC is inverse that of BKC within each study. RKC have also expanded distribution in areas formerly high in BKC.

## Discussion and Next Steps

BKC are limited in the supply of larvae/early juveniles recruiting to the benthos, as compared to the 1980's. RKC may be colonizing newly available habitat.

We will continue to examine changes in benthic habitat and predation with field studies in 2018 that will include king crab tethering experiments to study relative predation potential.

(1) Armstrong, D.A., Armstrong, J.L., Palacios, R., Williams, G., 1987. Distribution, abundance, and biology of blue king and Korean hair crabs around the Pribilof Islands. Outer Continental Shelf Environmental Assessment Program (OCSEAP). Research Unit 638. Minerals Management Service. Department of Interior. p. 278.

