**Supplemental Table 1:** Samples analyzed to determine the distribution of SSaDV in different geographic regions.

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| --- | --- | --- | --- |
| **Species** | **# individuals analyzed** | **Date** | **Location** |
| *Asterias rubrens* | 10 | 3/31/2014 | Texel, Netherlands |
| *Asterias rubrens* | 4 | 4/19/2014 | Oresund, Denmark |
| *Henricia ornata* | 6 | 5/14/2014 | False Bay, South Africa |
| *Matasterias muizenberg* | 6 | 5/14/2014 | False Bay, South Africa |
| *Parvulastra exigua* | 6 | 5/14/2014 | False Bay, South Africa |
| *Callopatria* sp. | 6 | 5/15/2014 | False Bay, South Africa |
| *Acanthaster planci* | 18 | 6/6/2014 | Townsville, Australia |
| *Luidia maculata* | 6 | 4/3/2014 | Hong Kong |
| *Astropecten polyacanthus* | 5 | 4/3/2014 | Hong Kong |
| *Ophidaster spp.* | 9 | 3/3/2014 | Okinawa, Japan |
| *Echinaster luzonicus* | 9 | 3/3/2014 | Okinawa, Japan |
| *Linckia laevigata* | 15 | 5/15/2014 | Chuuk, Federated States of Micronesia |
| *Marthasterias glacialis* | 2 | 5/16/2014 | Valparaiso, Chile |
| *Asterias rubrens* | 2 | 5/16/2014 | Valparaiso, Chile |
| *Heliaster helianthus* | 1 | 5/16/2014 | Valparaiso, Chile |
| *Patiriella pseudoexigua* | 21 | 3/17/2014 | Kaosiung, Republic of China |
| *Asterias amurensis* | 8 | 1/11/2015 | Weihai, People's Republic of China |