**Supplemental Table 3:** Sampling locations, times, species and sampling methods for geographic survey of contemporary (2016-2017) asteroids. BPBW = Body Wall Biopsy Punch; WA = Whole Animal; DPC = dissected pyloric caeca; IT = intertidal

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| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Date | Location of Sampling | Latitude (degrees N) | Longitude (degrees W) | Depth | Species Sampled | Number | Method of Sampling | Preservation Conditions |
| 3/30/2015 | Cape Cheerful, Dutch Harbor AK | 53.9031 | 166.4655 | IT | *Leptasterias* spp. | 11 | BPBW | 95% EtOH |
| 3/30/2015 | Cape Cheerful, Dutch Harbor AK | 53.9031 | 166.4655 | IT | *Henricia* spp. | 1 | BPBW | 95% EtOH |
| 3/30/2015 | Little South America, Dutch Harbor AK | 53.8719 | 166.5611 | 12m | *Evasterias troscheli* | 25 | BPBW | 95% EtOH |
| 3/30/2015 | Little South America, Dutch Harbor AK | 53.8719 | 166.5611 | 12m | *Pycnopodia helianthoides* | 17 | BPBW | 95% EtOH |
| 3/30/2015 | Little South America, Dutch Harbor AK | 53.8719 | 166.5611 | 12m | *Solaster stimpsoni* | 1 | BPBW | 95% EtOH |
| 3/30/2015 | Little South America, Dutch Harbor AK | 53.8719 | 166.5611 | 12m | Henricia spp. | 3 | BPBW | 95% EtOH |
| 4/2/2015 | Near Island, Kodiak AK | 57.7869 | 152.3916 | IT | *Evasterias troscheli* | 12 | BPBW | 95% EtOH |
| 4/2/2015 | Near Island, Kodiak AK | 57.7869 | 152.3916 | IT | *Pycnopodia helianthoides* | 8 | BPBW | 95% EtOH |
| 4/2/2015 | Near Island, Kodiak AK | 57.7869 | 152.3916 | IT | *Solaster stimpsoni* | 2 | BPBW | 95% EtOH |
| 4/2/2015 | Near Island, Kodiak AK | 57.7869 | 152.3916 | IT | *Henricia spp.* | 9 | BPBW | 95% EtOH |
| 8/4/2016 | Near Island, Kodiak AK | 57.7869 | 152.3916 | 12m | *Pycnopodia helianthoides* | 2 | WA | Frozen |
| 8/4/2016 | Near Island, Kodiak AK | 57.7869 | 152.3916 | 12m | *Evasterias troscheli* | 1 | WA | Frozen |
| 8/4/2016 | Near Island, Kodiak AK | 57.7869 | 152.3916 | 12m | *Henricia spp.* | 1 | WA | Frozen |
| 7/11/2017 | Attu Island, AK | 52.9157 | 173.17583E | 15m | *Evasterias troscheli* | 3 | DPC / BPBW | Frozen |
| 7/11/2017 | Attu Island, AK | 52.9157 | 173.17583E | 15m | *Solaster stimpsoni* | 3 | DPC / BPBW | Frozen |
| 7/19/2017 | Adak Island, AK | 51.8588 | 176.5818 | 15m | *Pycnopodia helianthoides* | 1 | DPC / BPBW | Frozen |
| 7/22/2017 | Yunaska Island, AK | 52.6898 | 170.5965 | 15m | *Pycnopodia helianthoides* | 3 | DPC / BPBW | Frozen |
| 7/25/2016 | Kidney Bank, Southern California Borderlands | 33.6440 | 119.0012 | 688m | *Astropecten polyacanthus* | 1 | WA | Frozen |
| 7/26/2016 | Kidney Bank, Southern California Borderlands | 33.6482 | 119.0023 | 690m | Unidentified Asteriidae | 1 | WA | Frozen |
| 7/26/2016 | Kidney Bank, Southern California Borderlands | 33.6482 | 119.0023 | 690m | Unidentified Valvatidae | 1 | WA | Frozen |
| 7/26/2016 | Kidney Bank, Southern California Borderlands | 33.6483 | 119.0215 | 690m | Unidentified Valvatidae | 1 | WA | Frozen |
| 7/26/2016 | Kidney Bank, Southern California Borderlands | 33.7512 | 119.1883 | 130m | *Rathbunaster californicus* | 1 | WA | Frozen |
| 7/28/2016 | Kidney Bank, Southern California Borderlands | 33.1873 | 119.3738 | 649m | Unidentified Asteriidae | 1 | WA | Frozen |
| 1/6/2016 | West Point, Puget Sound | 47.6583 | 122.4417 | 30-50m | *Hippasteria spinosa* | 3 | DPC / BPBW | Frozen |
| 1/6/2016 | West Point, Puget Sound | 47.6583 | 122.4417 | 30-50m | *Pycnopodia helianthoides* | 1 | DPC / BPBW | Frozen |
| 1/7/2016 | Possession Point, Puget Sound | 47.9736 | 122.3236 | 30-50m | *Mediaster aequalis* | 15 | DPC / BPBW | Frozen |
| 1/7/2016 | Possession Point, Puget Sound | 47.9736 | 122.3236 | 30-50m | *Pisaster brevispinus* | 1 | DPC / BPBW | Frozen |
| 1/7/2016 | Double Bluff, Puget Sound | 47.9583 | 122.5417 | 30-50m | *Evasterias troscheli* | 2 | DPC / BPBW | Frozen |
| 1/7/2016 | Double Bluff, Puget Sound | 47.9583 | 122.5417 | 30-50m | *Henricia spp.* | 6 | DPC / BPBW | Frozen |
| 1/7/2016 | Bush Point, Puget Sound | 48.0583 | 122.6083 | 30-50m | *Henricia spp.* | 4 | DPC / BPBW | Frozen |
| 1/8/2016 | Point Partridge, Strait of Juan de Fuca | 48.2333 | 122.7917 | 30-50m | *Henricia spp.* | 15 | DPC / BPBW | Frozen |
| 1/8/2016 | Point Partridge, Strait of Juan de Fuca | 48.2333 | 122.7917 | 30-50m | *Solaster stimpsoni* | 5 | DPC / BPBW | Frozen |
| 1/8/2016 | Green Point, Strait of Juan de Fuca | 48.5000 | 122.7250 | 30-50m | *Crossaster papposus* | 5 | DPC / BPBW | Frozen |
| 1/8/2016 | Green Point, Strait of Juan de Fuca | 48.5000 | 122.7250 | 30-50m | *Henricia spp.* | 4 | DPC / BPBW | Frozen |
| 1/8/2016 | East Sound, San Juan Islands | 48.6083 | 122.8500 | 30-50m | *Henricia spp.* | 4 | DPC / BPBW | Frozen |
| 1/8/2016 | East Sound, San Juan Islands | 48.6083 | 122.8500 | 30-50m | *Pteraster tesselatus* | 1 | DPC / BPBW | Frozen |
| 1/8/2016 | East Sound, San Juan Islands, | 48.6083 | 122.8500 | 30-50m | *Solaster stimpsoni* | 1 | DPC / BPBW | Frozen |
| 1/9/2016 | Friday Harbor, San Juan Islands | 48.5417 | 123.0000 | 30-50m | *Henricia spp.* | 1 | DPC / BPBW | Frozen |
| 1/9/2016 | Point Doughty, San Juan Islands | 48.7083 | 122.9500 | 30-50m | *Luidia interifolia* | 1 | DPC / BPBW | Frozen |
| 1/9/2016 | Point Doughty, San Juan Islands | 48.7083 | 122.9500 | 30-50m | *Pteraster tesselatus* | 1 | DPC / BPBW | Frozen |
| 1/10/2016 | Smith Island, Bellingham Bay, WA | 48.3167 | 122.8667 | 30-50m | *Evasterias troscheli* | 1 | DPC / BPBW | Frozen |
| 1/10/2016 | Smith Island, Bellingham Bay, WA | 48.3167 | 122.8667 | 30-50m | *Pycnopodia helianthoides* | 1 | DPC / BPBW | Frozen |
| 1/10/2016 | Dungeness Bay, Strait of Juan de Fuca | 48.1750 | 123.1000 | 30-50m | *Crossaster papposus* | 1 | DPC / BPBW | Frozen |
| 1/10/2016 | Dungeness Bay, Strait of Juan de Fuca | 48.1750 | 123.1000 | 30-50m | *Henricia spp.* | 1 | DPC / BPBW | Frozen |
| 1/10/2016 | Dungeness Bay, Strait of Juan de Fuca | 48.1750 | 123.1000 | 30-50m | *Orthasterias kohleri* | 1 | DPC / BPBW | Frozen |
| 1/10/2016 | Dungeness Bay, Strait of Juan de Fuca | 48.1750 | 123.1000 | 30-50m | *Pteraster tesselatus* | 1 | DPC / BPBW | Frozen |
| 1/11/2016 | Liplip Point, Puget Sound | 48.0167 | 122.6667 | 30-50m | *Evasterias troscheli* | 4 | DPC / BPBW | Frozen |
| 1/11/2016 | Liplip Point, Puget Sound | 48.0167 | 122.6667 | 30-50m | *Henricia spp.* | 18 | DPC / BPBW | Frozen |
| 1/11/2016 | Liplip Point, Puget Sound | 48.0167 | 122.6667 | 30-50m | *Solaster stimpsoni* | 1 | DPC / BPBW | Frozen |
| 1/11/2016 | Foulweather Bluff, Puget Sound | 47.9500 | 122.6083 | 30-50m | *Dermasterias imbricata* | 1 | DPC / BPBW | Frozen |
| 1/11/2016 | Foulweather Bluff, Puget Sound | 47.9500 | 122.6083 | 30-50m | *Henricia spp.* | 8 | DPC / BPBW | Frozen |
| 2/9/2017 | Higgins Beach, Ketchikan AK | 55.4467 | 131.8274 | IT | *Pisaster ochraceus* | 8 | DPC / BPBW | Frozen |
| 2/9/2017 | Higgins Beach, Ketchikan AK | 55.4467 | 131.8274 | IT | *Dermasterias imbricata* | 10 | DPC / BPBW | Frozen |
| 2/11/2017 | Higgins Beach, Ketchikan AK | 55.4467 | 131.8274 | IT | *Evasterias troscheli* | 12 | DPC / BPBW | Frozen |
| 2/9/2017 | Higgins Beach, Ketchikan AK | 55.4467 | 131.8274 | IT | *Pycnopodia helianthoides* | 5 | DPC / BPBW | Frozen |