Table 1. Compilation of studies dealing with seagrass-sea cucumber associations in the seagrass ecosystem. The seagrass distributions are based on global biographic bioregions developed by Short et al. 2007. LS, Laboratory Study; FS, Field Study; *Ac, Actinopyga*; *Ap, Apostichopus*; *B, Bohadschia; Ch, Chirodota; Cy, Cymodocea; E, Enhalus, Ha, Halophila; Ho, Holothuria; Pe, Pearsonothuria; Po, Posidonia; St, Stichopus; Sy, Syringodium; T, thalassia; Z, Zostera.*

| **Location** | **Bioregion** | **Study type** | | **Seagrass**  **Species** | | **Explanatory**  **Variables** | | **Sea cucumber**  **Species** | **Response**  **variables** | | **Conclusion(s)** | | **Source** | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Southeast Queensland, Australia | Tropical Indo-Pacific | | FS | | Cy. serrulata | | Sea cucumber density | Ho. scabra | | Seagrass growth rates and biomass | | Biomass and growth rate lower when sea cucumbers were excluded | | Wolken-hauer et al. 2010 |
| Cocos Island, Australia | Tropical Indo-Pacific | | FS | | Not specified | | Seagrass coverage | Ac. mauritiana;  Ac. miliaris;  B. argus;  Ch. rigida;  Ho. atra;  Ho. coluber;  Ho. edulis;  Ho. fuscogilva;  Pe. graeffei;  St. chloronotus;  St. herrmanni;  Thelenota ananas;  Synapta maculata; | | Sea cucumber abundance | | No discernible relationship between the seagrass coverage and sea cucumber abundance | | Bell-chambers et al. 2011 |
| Solomon Islands | Tropical Indo-Pacific | | LS | | T. hemprichii; E. acoroides | | Seagrass composition | Ho. scabra | | Settlement and metamorphosis rates | | Seagrasses as suitable substrate for settlement of larvae; Seagrass extracts promoted metamorphosis of larvae | | Mercier et al. 2000 |
| Torres Strait | Tropical Indo-Pacific | | FS | | Not specified | | Seagrass coverage | Ho. scabra (main species); 33 other species | | Abundance and distribution pattern | | Distribution and abundance of *Ho. scabra* correlated to seagrass coverage | | Long et al. 1996 |
| New Caledonia | Tropical Indo-Pacific | | FS | | Cy. serrulata;  Cy. rotundata; Ha. ovalis;  Sy. isoetifolium | | Segrass coverage | Ho. scabra | | Survival rate, Growth rates,  Burying rates | | Survival was highest at 42% seagrass cover; Growth rate was highest at 34% seagrass cover; Burial rate was highest at intermediate C content | | Ceccarelli et al. 2018 |
| New Caledonia | Tropical Indo-Pacific | | FS | | Cy. serrulata;  Cy. rotundata;  Sy. isoitifolium;  Ha. ovalis | | Seagrass coverage | Ho. scabra | | Survival and growth rates | | Survival rate was variable and depended on sites; Growth rate was dependent on the stocking density | | Purcell and Simutoga 2008 |
| New Ireland,  Papua New Guinea | Tropical Indo-Pacific | | FS | | Cy. rotundata  E. acoroides  T. hemprichii | | Seagrass coverage & composition; Canopy height | Juvenile  Ho. scabra | | Survival rates;  Growth rates | | Seagrass coverage, Chlorophyll-a content and epiphytes were required to the survival and growth of sea cucumbers | | Hair et al. 2016 |
| New Ireland,  Papua New Guinea | Tropical Indo-Pacific | | FS | | Cy. rotundata  E. acoroides  T. hemprichii | | Seagrass coverage, presence/absence | Juvenile  Ho. scabra | | Burying behavior | | Reduced burying of cultured individuals may increase the potential for predation | | Hair et al. 2020 |
| North Lombok, Indonesia | Tropical Indo-Pacific | | LS | | E. acoroides | | Stable Isotope values of food sources | Ho. scabra | | Assimilation rates | | Low assimilation rates of seagrass | | Indriana et al. 2018 |
| Northwest Philippines | Tropical Indo-Pacific | | FS | | T. hemprichii | | Seagrass density | Juvenile St. cf. horrens | | Sea cucumber density | | Abundance was associated with the seagrass density and with the sediment organic matter from plant detritus | | Palomar-Abesamis et al. 2017 |
| Trang Province, Andaman Sea | Tropical Indo-Pacific | | FS | | E. acoroides;  T. hemprichii;  Ha. ovalis | | Stable Isotope values of food sources | Ho. scabra;  Ho. atra-H. leucospilota complex | | Fractional contribution to sea cucumber diets | | Up to 61-70% of the sea cucumber diets were derived from the seagrasses | | Floren et al. 2021 |
| Northwest Sri Lanka | Tropical Indo-Pacific | | FS | | Not specified | | Seagrass coverage | Ho. atra;  Ho. edulis | | Sea cucumber abundance | | Seagrass as preferred habitat by both sea cucumber species | | Dissana-yake and Stefansson 2012 |
| Western Grand Bahamas | Tropical Atlantic | | FS | | T. testudinum | | Distribution patterns; Habitat refuge | Ho. arenicola | | Sea cucumber density | | Highest densities of sea cucumbers are found in seagrass beds | | Mosher 1980 |
| Belize | Tropical Atlantic | | FS | | Not specified, but possibly T. testudinum | | Distribution patterns; Size distribution | Ho. mexicana | | Sea cucumber presence/absence | | Seagrass habitat near mangroves as settlement and nursery area | | Rogers et al. 2018 |
| Algiers Bay | Mediter-ranean | | FS | | Po. oceanica;  Cy. nodosa | | Organic matter content in the sediment; As preferred habitat | Ho. tubulosa;  Ho. poli;  Ho. stellati;  Ho. forskali;  Ho. sanctori | | Percentage of organic matter inside the gut | | Variation of organic matter content inside the gut was related to the micro-distribution of sea cucumbers in the meadow | | Mezali and Soualili 2013. In French |
| Northwest Algeria | Mediter-ranean | | FS | | Po. oceanica | | Stable isotope profiles of the seagrass and sea cucumbers | Ho. poli;  Ho. tubulosa;  Ho. sanctori;  Ho. forskali | | Contribution to the sea cucumber diet; Degree of niche overlap among sea cucumbers | | Low contribution to sea cucumber diets; Niche sizes differed between species | | Belbachir et al. 2019 |
| Northwest Spain | Mediter-ranean | | FS | | Po. oceanica | | Landscape configuration of seagrass meadows | Ho. poli;  Ho. tubulosa-mamatta complex | | Source contribution to sea cucumber diets | | Diet of sea cucumbers derived mainly from seagrass detritus; Contribution did not vary with the landscape configuration. | | Ricart et al. 2015 |
| Saint. Mandrier, France | Mediter-ranean | | FS | | Po. oceanica | | Distribution pattern of sea cucumbers | Ho. tubulosa;  Ho. poli | | Percentage of seagrass in the gut | | Seagrass dominated the ingested materials | | Massin and Jangoux 1976 In French |
| Gulf of Calvi | Mediter-ranean | | FS | | Po. oceanica | | Stable isotope values of sources | Ho. stellati;  Ho. tubulosa | | Stable isotope values of sea cucumbers | | Seagrass dominates in the diet of sea cucumber s relative to other animal taxa | | Lepoint et al. 2000 |
| Northern Sicily | Mediter-ranean | | LS | | Po. oceanica | | Sea cucumber density | Ho. tubulosa | | Ingestion rate;  Trophic enrichments | | Ingestion rate varied from 30 to 100% depending on density; Evidence of assimilation thru stable isotope | | Costa et al. 2014 |
| Central Tyrrhenian Sea | Mediter-ranean | | FS | | Cy. nodosa and  Po. oceanica | | Stable Isotope values of food sources | *Ho. polii; Ho. tubulosa* | | Fractional contribution to sea cucumber diets; Niche width | | About 63-74% of the sea cucumber diets were derived from the seagrasses | | Boncagni et al. 2019 |
| Ria Formosa, South Portugal | Temperate Atlantic | | LS | | Z. noltii and Cy. nodosa | | Feeding experiments with seagrass debris | *Ho. arguinensis* | | Growth rates | | Highest growth rate in treatment with 40% *Z. noltii* debris*;* negative growth rate in treatment with *Cy. nodosa* debris | | Domínguez-Godino et al. 2019 |
| Ria Formosa coastal lagoon, South Portugal | Temperate Atlantic | | FS | | Z. noltii; Z. marina; Cy. nodosa | | Seagrass composition | *Ho. arguinensis* | | Sea cucumber density, abundance and habitat association | | Sea cucumbers were significantly more abundant and largest in sizes in the *Z. noltii* meadows | | Domínguez-Godino et al.2020 |
| Shandong, North China | Temperate North Pacific | | LS | | Z. marina | | Feeding experiments with seagrass detritus | Ap. japonicus | | Growth rate | | Highest growth rate in treatment at 40% seagrass detritus | | Liu et al. 2013 |
| Toliara, Southwest Madagascar | Tropical Indo-Pacific | | FS | | T. hemprichii; Cy. rotundata | | Stocking densities of juvenile H. scabra | Ho. scabra | | Seagrass leaf extension rates | | Significant increase in leaf extension rate in *T. hemprichii* but not in *Cy. serrulata* | | Arnull et al. 2021 |
| Northwest Philippines | Tropical Indo-Pacific | | LS | | T. hemprichii | | Feeding experiments with seagrass detritus | Juvenile St.cf. horrens | | Sea cucumber growth; feeding and sheltering behavior, biochemical composition | | Seagrass detritus did not significantly affect growth and body composition when compared to a biofilm-only control | | Palomar-Abesamis et al. 2018 |
| Ishigaki Island, Japan | Tropical Indo-Pacific | | FS | | Not specified; but possibly T. hemprichii;  Ha. ovalis | | Types of bottom characteristics | Ho. atra, Ho. leucospilota; St. chloronotus | | Sea cucumber densities | | Among the sea three cucumber species, *H. atra* was most abundant in seagrass beds | | Tanita and Yamada 2019 |
| Ishigaki Island, Japan | Tropical Indo-Pacific | | FS | | T. hemprichii;  Cy. rotundata | | Types of bottom sediment and biomes | Ho. atra; St. chloronotus | | Sea cucumber distribution and abundance | | H. atra was more abundant than S. chloronotus in the seagrass beds; decreased in abundance over a 17- year period | | Nishihama and Tanita 2021 |

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