

ASSESSING VULNERABILITY OF FISH IN THE U.S. MARINE AQUARIUM TRADE

Table S3: Sources and references used to determine attribute and data quality scores listed in

Appendix Table S2.

1. Abesamis, R., Clements, K.D., Choat, J.H., McIlwain, J., Myers, R., Nanola, C., Rocha, L.A., Russell, B. & Stockwell, B. (2012). *Acanthurus japonicus*. Available from: IUCN 2013. IUCN Red List of Threatened Species. Version 2013.1. <www.iucnredlist.org>.
2. Albins, M. A. & Hixon, M.A. (2008). Invasive Indo-Pacific lionfish *Pterois volitans* reduce recruitment of Atlantic coral-reef fishes. *Mar Ecol-Prog Ser*, **367**, 233–238.
3. Almany, G.R., Beruman, M.L., Thorrold, S.R., Planes, S. & Jones, G.P. (2007). Local replenishment of coral reef fish populations in a Marine Reserve. *Science*, **316**, 742–744.
4. Arias-González, J.E., González-Gándara, C., Cabrera, J.L. & Christensen, V. (2011). Predicted impact of the invasive lionfish *Pterois volitans* on the food web of a Caribbean coral reef. *Environ. Res.*, **111**, 917–925.
5. Asoh, K. & Yoshikawa, T. (2002). The role of temperature and embryo development time in the diel timing of spawning in a coral-reef damselfish with high-frequency spawning synchrony. *Environ. Biol. Fish.*, **64**, 379–392.
6. Asoh, K. & Yoshikawa, T. (1996). Nesting behavior, male parental care, and embryonic development in the fairy basslet, *Gramma loreto*. *Copeia*, **1996**, 1–8.
7. Asoh, K. (1996). Reproductive behavior and mating system of the fairy basslet, *Gramma loreto*. *Copeia*, **1996**, 1037–1043. Citing Collette, B.B. & Talbot, F.H. (1972). Activity patterns of coral reef fishes with emphasis on nocturnal-diurnal changeover. *Bulletin of the Natural History Museum of Los Angeles County*, **14**, 98–124.
8. Awata, S., Miura, S., Seki, S., Sagawa, T., Sato, N. & Sakai, K. (2010). Seasonal changes in reproductive and physical condition, sexual dimorphism, and male mating tactics in the jewelled blenny *Salarias fasciatus*. *Ichthyol. Res.*, **57**, 161–168.
9. Aydin, M. (2011). Growth, reproduction and diet of pufferfish (*Lagocephalus sceleratus* Gmelin, 1789) from Turkey's Mediterranean sea coast. *Turk. J. Fish. Aquat. Sc.*, **11**, 589–596.
10. Bariche, M., Riyad, S. & Azzurro, E. (2009). Fecundity and condition of successful invaders: *Siganus rivulatus* and *S. luridus* (Actinopterygii: Perciformes: Siganidae) in the eastern Mediterranean Sea. *Acta Ichthyol. Piscat.*, **39**, 11–18.
11. Barnett, A. & Bellwood, D.R. (2005). Sexual dimorphism in the buccal cavity of paternal mouthbrooding cardinalfishes (Pisces: Apogonidae). *Mar Biol*, **148**, 205–212.
12. Beets, J. (1997). Effects of a predatory fish on the recruitment and abundance of Caribbean coral reef fishes. *Mar. Ecol. Prog. Ser.*, **148**, 11–21.
13. Betancur, R., Hines, A., Acero P., A., Ortí, G., Wilbur, A.E. & Freshwater, D.W. (2011). Reconstructing the lionfish invasion: Insights into Greater Caribbean biogeography. *J. Biogeogr.*, **38**, 1281–1293.
14. Böhlke, E.B. & Randall, J.E. (2000). A review of the moray eels (Anguilliformes: Muraenidae) of the Hawaiian Islands, with descriptions of two new species. *P. Acad. Nat. Sci. Phila.*, **150**, 203–278.
15. Bushnell, M.E., Claisse, J.T. & Laidley, C.W. (2010). Lunar and seasonal patterns in fecundity of an indeterminate, multiple-spawning surgeonfish, the yellow tang *Zebrasoma flavescens*. *J. Fish Biol.*, **76**, 1343–1361.

ASSESSING VULNERABILITY OF FISH IN THE U.S. MARINE AQUARIUM TRADE

16. Buston, P.M. (2003) Mortality is associated with social rank in the clown anemonefish (*Amphiprion percula*). *Mar. Biol.*, **143**, 811–815.
17. Buston, P.M. & Garcia, M.B. (2007) An extraordinary life span estimate for the clown anemonefish *Amphiprion percula*. *J. Fish Biol.*, **70**, 1710–1719.
18. Callan, C.K. & Laidley, C.W. (2010). The effects of water source and secondary water treatment on flame angelfish *Centropyge loriculus* (Günther) reproduction. *Aquac. Res.*, **41**, e537–e544.
19. Carey, J.R. & Judge, D.S. (2000). *Longevity records: life spans of mammals, birds, amphibians, reptiles, and fish. Monographs on population aging. Vol. 8.* Odense University Press, Odense.
20. Cato, J.C. & Brown, C.L., eds. (2008). *Marine ornamental species: collection, culture and conservation.* Iowa State Press, Ames.
21. Choat, J. H. & Axe, L.M. (1996). Growth and longevity in acanthurid fishes; an analysis of otolith increments. *Mar. Ecol. Prog. Ser.*, **134**, 15–26.
22. Choat, J., Clements, K. & Robbins, W. (2002). The trophic status of herbivorous fishes on coral reefs. *Mar. Biol.*, **140**, 613–623.
23. Choo, C.K. & Liew, H.C. (2003). Spatial distribution, substrate assemblages and size composition of sea horses (Family Syngnathidae) in the coastal waters of Peninsular Malaysia. *J. Mar. Biol. Assoc. UK*, **83**, 271–276.
24. Chow, P.S., Chen, T.W. & Teo, L.H. (1994). Physiological responses of the common clownfish, (*Amphiprion ocellaris*) (Cuvier), to factors related to packaging and long-distance transport by air. *Aquaculture*, **127**, 347–361.
25. Claisse, J.T., McTee, S.A. & Parrish, J.D. (2009a) Effects of age, size, and density on natural survival for an important coral reef fishery species, yellow tang, *Zebrasoma flavescens*. *Coral Reefs*, **28**, 95–105.
26. Claisse, J.T., Kienzie, M., Bushnell, M.E., Shafer, D.J. & Parrish, J.D. (2009b). Habitat- and sex-specific life history patterns of yellow tang *Zebrasoma flavescens* in Hawaii, USA. *Mar. Ecol. Prog. Ser.*, **389**, 245–255.
27. Claydon, J.A.B., McCormick, M.I. & Jones, G.P. (2012). Patterns of migration between feeding and spawning sites in a coral reef surgeonfish. *Coral reefs*, **31**, 77–87.
28. Close, P.G., Davies, P.M. & Trayler, K. (2010). Recruitment and growth of two small-bodied resident fish species (Gobiidae and Atherinidae) in oligohaline, seasonally open lagoons. *J. Fish Biol.*, **76**, 1431–1453.
29. Cole, K.S. (2009). Modifications of the reproductive complex and implications for the reproductive biology of *Gobiodon oculolineatus* (Teleostei: Gobiidae). *Environ. Biol. Fish.*, **84**, 261–273.
30. Colin, P.L. (1973). Burrowing behavior of the yellowhead jawfish, *Opistognathus aurifrons*. *Copeia*, **1973**, 84–90.
31. Contreras, M., Anguas, B., González, P.G. & Martínez, R.E. (2012). Comportamiento reproductivo del pez *Opistognathus rosenblatti* (Perciformes: Opistognathidae) en cautiverio. *Rev. Biol. Trop.*, **60**, 1303–1315.
32. Crosby, M.P. & Reese, E.S. (2005). Relationship of habitat stability and intra-specific population dynamics of an obligate corallivore butterflyfish. *Aquat. Conserv.*, **15**, S13–S25.
33. Cure, K., Benkwitt, C.E., Kindinger, T.L., Pickering, E.A., Pusack, T.J., McIlwain, J.L. & Hixon, M.A. (2012). Comparative behavior of red lionfish *Pterois volitans* on native Pacific versus invaded Atlantic coral reefs. *Mar. Ecol. Prog. Ser.*, **467**, 181–192.

ASSESSING VULNERABILITY OF FISH IN THE U.S. MARINE AQUARIUM TRADE

34. Curtis, J.M.R., Ribeiro, J., Erzini, K. & Vincent, A.C.J. (2007). A conservation trade-off? Interspecific differences in seahorse responses to experimental changes in fishing effort. *Aquat. Conserv.*, **17**, 468–484.
35. Daw, T.M., Rogers, G.C.C., Mapson, P. & Kynoch, J.E. (2001). Structure and management issues of the emerging ornamental fish trade in Eritrea. *Aquarium Sci. Conserv.*, **3**, 53–64.
36. Dee, L.E., Horii, S.S. & Thornhill, D.J. (2014). Conservation and management of the trade in ornamental coral-reef wildlife: successes, shortcomings, and future directions. *Biol. Conserv.*, **169**, 225–237.
37. Feitosa, C.V., Ferreira, B.P. & De Araujo, M.E. (2009). A rapid new method for assessing sustainability of ornamental fish by-catch from coral reefs. *Mar. Freshwater Res.*, **59**, 1092–1100.
38. Forrester, G., Harmon, L., Helyer, J., Holden, W. & Karis, R. (2011). Experimental evidence for density-dependent reproductive output in a coral reef fish. *Pop. Ecol.*, **53**, 155–163.
39. Froese, R. & Pauly, D. (2013). FishBase. Available from <http://www.fishbase.org>. Accessed 15 June 2013. Citing Fontayne, A., pers. comm.
40. Fujita, R., Thornhill, D.J., Karr, K., Cooper, C.H. & Dee, L.E. (in press). Assessing and managing data-limited ornamental fisheries in coral reefs. *Fish Fish.*, doi:10.1111/faf.12040.
41. Fukino, Y. (2002). Life history of Yaeyamaginpo *Salarias fasciatus* at Sesoko Island, northern Okinawa, Japan. Bachelor Thesis, University of the Ryukyus, Okinawa.
42. Gardiner, N.M. & Jones, G.P. (2005). Habitat specialisation and overlap in a guild of coral reef cardinalfishes (Apogonidae). *Mar. Ecol. Prog. Ser.*, **305**, 163–175.
43. Gerkema, M.P., Videler, J.J., de Wiljes, J., van Lavieren, H., Gerritsen, H. & Karel, M. (2000). Photic entrainment of circadian activity patterns in the tropical labrid fish *Halicthys chrysus*. *Chronobiol. Int.*, **17**, 613–622.
44. Gharaibeh, B.M. & Hulings, N.C. (1990). The reproduction of *Chaetodon austriacus*, *C. fasciatus* and *C. paucifasciatus* (Chaetodontidae, Perciformes) in the Jordan Gulf of Aqaba. *Environ. Biol. Fish.*, **29**, 67–72.
45. Ghosh, S., Kumar, T.T.A. & Balasubramanian, T. (2012). Determining the level of parental care relating fanning behavior of five species of clownfishes in captivity. *Indian J. Geo-Mar. Sci.*, **41**, 430–444.
46. Gill, A.C. & Edwards, A.J. (2004). Revision of the Indian Ocean dottedback fish genera *Chlidichthys* and *Pectinochromis* (Perciformes: Pseudochromidae: Pseudoplesiopinae). *Smithiana Bull.*, **3**, 1–47.
47. Gill, A.C., Allen, G.R. & Erdmann, M. (2012). Two new species of striped *Pseudochromis* from the Philippine Islands and Indonesia, with a redescription of *P. colei* (Perciformes: Pseudochromidae). *Zootaxa*, **3165**, 25–38.
48. Gonzales, E. & Savaris, J., 2005. International seafood trade: Supporting sustainable livelihoods among poor aquatic resource users in Asia. Output 2 Marine Ornamentals Trade in the Philippines and Options for its Poor Stakeholders. *Poseidon Aquatic Resource Management Ltd., Network of Aquaculture Centres in Asia-Pacific, and the STREAM Initiative*.
49. Gopakumar, G. (2008). Resource analysis, trade potential and conservation management of marine ornamentals of India. In: (eds. Madhusoodana Kurup, B., Boopendranath, M.R., Ravindran, K., Banu, S. & Gopalakrishnan Nair, A.) *Ornamental Fish Breeding, Farming and Trade*. Department of Fisheries, Thiruvananthapuram, pp. 65–79.

ASSESSING VULNERABILITY OF FISH IN THE U.S. MARINE AQUARIUM TRADE

50. Grandcourt, E., Al Abdessalaam, T.Z., Francis, F. & Al Shamsi, A. (2010). Age-based life history parameters and status assessments of by-catch species (*Lethrinus borbonicus*, *Lethrinus microdon*, *Pomacanthus maculosus* and *Scolopsis taeniatus*) in the southern Arabian Gulf. *J. Appl. Ichthyol.*, **26**, 381–389.
51. Grandcourt, E.M., Al Abdessalaam, T.Z., Al Shamsi, A.T. & Franklin, F. (2006). Biology and assessment of the painted sweetlips (*Diagramma pictum* (Thunberg, 1792)) and the spangled emperor (*Lethrinus nebulosus* (Forsskal, 1775)) in the southern Arabian Gulf. *Fish. B-NOAA*, **104**, 75–88.
52. Grutter, A.S. (2012). Enhanced colonization success and competition associated with conspecifics in cleaner fish *Labroides dimidiatus* juveniles. *Coral reefs*, **31**, 1169–1176.
53. Hoenig, J.M. (1983). Empirical use of longevity data to estimate mortality rates. *Fish. B-NOAA*, **82**, 898–903.
54. Hoover, J.P. (1993) *Hawaii's Fishes: A guide for snorkelers, divers and aquarists*. Mutual Publishing, Honolulu.
55. Hubble, M. (2003). The ecological significance of body size in tropical wrasses (Pisces: Labridae). Doctoral Dissertation, James Cook University, Townsville.
56. International Union for the Conservation of Nature (2014). Red list of threatened species v2013.2. Available from <http://www.iucnredlist.org/>. Accessed 24 February 2014.
57. Jones, A.M., Gardner, S. & Sinclair, W. (2008). Losing 'Nemo': Bleaching and collection appear to reduce inshore populations of anemonefishes. *J. Fish Biol.*, **73**, 753–761.
58. Jones, G.P., Planes, S. & Thorrold, S.R. (2005). Coral reef fish larvae settle close to home. *Curr. Biol.*, **15**, 1314–1318.
59. Kadota, T., Osato, J., Nagata, K. & Sakai, Y. (2012). Reversed sex change in the harem protogynous hawkfish *Cirrhitichthys falco* in natural conditions. *Ethology*, **118**, 226–234.
60. Kokita, T. (2004). Latitudinal compensation in female reproductive rate of a geographically widespread reef fish. *Environ. Biol. Fish.*, **71**, 213–224.
61. Krone, R., Paster, M. & Schuhmacher, H. (2011). Effect of the surgeonfish *Ctenochaetus striatus* (Acanthuridae) on the processes of sediment transport and deposition on a coral reef in the Red Sea. *Facies*, **57**, 215–221.
62. Künzli, F. & Tachihara, K. (2012). Validation of age and growth of the Picasso triggerfish (Balistidae: *Rhinecanthus aculeatus*) from Okinawa Island, Japan, using sectioned vertebrae and dorsal spines. *J. Oceanogr.*, **68**, 817–829.
63. Kuwamura, T. (1997). Evolution of female egg care in harem triggerfish, *Rhinecanthus aculeatus*. *Ethology*, **103**, 1015–1023.
64. Leese, J.M., Sneek, J.L. & Itzkowitz, M. (2010). Interactions of natural and sexual selection: damselfish prioritize brood defense with male-male competition or courtship. *Behaviour*, **147**, 37–52.
65. LeGore, R.S., Hardin, M.P. & Ter-Ghazaryan, D. (2005). Organization and operation of the marine ornamental fish and invertebrate export fishery in Puerto Rico. *Rev. Biol. Trop.*, **53**, 145–153.
66. Leis, J.M. & Carson-Ewart, B.M. (2000). Behaviour of pelagic larvae of four coral-reef fish species in the ocean and an atoll lagoon. *Coral Reefs*, **19**, 247–257.
67. Leu, M.-Y., Meng, P.-J., Tew, K.S., Kuo, J. & Hung, C.-C. (2012). Spawning and development of larvae and juveniles of the Indian Ocean oriental sweetlips, *Plectorhinchus vittatus* (Linnaeus, 1758), in the Aquarium. *J. World Aquacult. Soc.*, **43**, 595–606.

ASSESSING VULNERABILITY OF FISH IN THE U.S. MARINE AQUARIUM TRADE

68. Leu, M-Y., Liou, C-H, Wang, W-H., Yang, S-D. & Meng, P-J. (2009). Natural spawning, early development and first feeding of the semicircle angelfish [*Pomacanthus semicirculatus* (Cuvier, 1831)] in captivity. *Aquac. Res.*, **40**, 1019–1030.
69. Leu, M.Y., Meng, P-J., Huang, C-S., Tew, S.T., Kuo, J. & Liou, C-H. (2010). Spawning behaviour, early development and first feeding of the bluestriped angelfish [*Chaetodontoplus septentrionalis* (Temminck & Schlegel, 1844)] in captivity. *Aquac. Res.*, **41**, e39–e52.
70. Luckhurst, B.E. & Luckhurst, K. (1977). Recruitment patterns of coral reef fishes on the fringing reef of Curacao, Netherlands Antilles. *Can. J. Zool.*, **55.4**, 681–689.
71. Madhu, K., Madhu, R. & Retheesh, T. (2012). Broodstock development, breeding, embryonic development and larviculture of spine-cheek anemonefish, *Premnas biaculeatus* (Bloch, 1790). *Indian J. Fish.*, **59**, 65–75.
72. Matos-Caraballo, D. & Mercado-Porrata, A. (2008). Description of the ornamental fishery in Puerto Rico, 1997–2005. *Proceedings of the 60th Gulf and Caribbean Fisheries Institute*, 97–107.
73. McClanahan, T.R. (2000). Recovery of a coral reef keystone predator, *Balistapus undulatus*, in East African marine parks. *Biol. Conserv.*, **94**, 191–198.
74. McCormick, M.I. & Meekan, M.G. (2007). Social facilitation of selective mortality. *Ecology*, **88**, 1562–1570.
75. McIlwain, J.L. (2002). Link between reproductive output and larval supply of a common damselfish species, with evidence of replenishment from outside the local population. *Mar. Ecol. Prog. Ser.*, **236**, 219–232.
76. Meirelles, M.E., Tsuzuki, M.Y., Ribeiro, F.F., Medeiros, R.C. & Silva, I.D. (2009). Reproduction, early development and larviculture of the barber goby, *Elacatinus figaro* (Sazima, Moura & Rosa 1997). *Aquac. Res.*, **41**, 11–18.
77. Michael, S. (2005). *Reef Aquarium Fishes*. T.F.H. Publications, Inc., Neptune City.
78. Molina, L. & Segade, A. (2011) Aquaculture as a potential support of marine aquarium fish trade sustainability. In: (eds. Brebbia, C.A. & Zubir, S.S.) *Management of Natural Resources, Sustainable Development and Ecological Hazards*. WIT Press, Southampton, pp. 15–25.
79. Moorhead, J.A. & Zeng, C. (2011). Breeding of the forktail blenny *Meiacanthus atrodorsalis*: Broodstock management and larval rearing. *Aquaculture*, **318**, 248–252.
80. Morris Jr., J.A., Akins, J.L., Barse, A., Cerino, D., Freshwater, D.W., Green, S.J., Green, R.C., Muñoz, C.P. & Whitfield, P.E. (2009). Biology and ecology of the invasive lionfishes, *Pterois miles* and *Pterois volitans*. *Proceedings of the 61st Gulf and Caribbean Fisheries Institute*, 1–6.
81. Munday, P.L., Jones, G.P. & Caley, M.J. (1997). Habitat specialisation and the distribution and abundance of coral-dwelling gobies. *Mar. Ecol. Prog. Ser.*, **152**, 227–239.
82. Murugan, A., Dhanya, R.A., Sreepada, A., Rajagopal, S. & Balasubramanian, T. (2009). Breeding and mass-scale rearing of three spotted seahorse, *Hippocampus trimaculatus*, Leach under captive conditions. *Aquaculture*, **290**, 87–96.
83. Ochavillo, D., Hodgson, G., Shuman, C. & Ruz, R. (2004). Status of the Philippine marine aquarium fish trade. In: *Turbulent Seas: The Status of Philippine Marine Fisheries*. Department of Agriculture-Bureau of Fisheries and Aquatic Resources, Cebu City, pp. 60–64.
84. Okuda, N. & Ohnishi, N. (2001). Nocturnal hatching timing of mouthbrooding male cardinalfish *Apogon niger*. *Ichthyol. Res.*, **48**, 207–212.

ASSESSING VULNERABILITY OF FISH IN THE U.S. MARINE AQUARIUM TRADE

85. Olivotto, I., Tokle, N.E., Nozzi, V., Cossignani, L. & Carnevali, O. (2010). Preserved copepods as a new technology for the marine ornamental fish aquaculture: A feeding study. *Aquaculture*, **308**, 124–131.
86. Olivotto, I., Rollo, A., Sulpizio, R., Avella, M., Tosti, L. & Carnevali, O. (2006). Breeding and rearing the sunrise dottyback *Pseudochromis flavivertex*: the importance of live prey enrichment during larval development. *Aquaculture*, **255**, 480–487.
87. Olivotto, I., Cardinali, M., Barbaresi, L., Maradonna, F. & Carnevali, O. (2003). Coral reef fish breeding: the secrets of each species. *Aquaculture*, **224**, 69–78.
88. Petersen, C.W. (1991). Variation in fertilization rate in the tropical reef fish, *Halichoeres bivittatus*: correlates and implications. *Biol. Bull.*, **181**, 232–237.
89. Planes, S., Jones, G.P. & Thorrold, S.R. (2009). Larval dispersal connects fish populations in a network of marine protected areas. *P. Natl. Acad. Sci. U.S.A.*, **106**, 5693–5697.
90. Prappas, J.M., Greene, L.E. & White, R. (1991). Reproductive behavior of the sergeant major, *Abudefduf saxatilis*, within a closed system aquarium. *Environ. Biol. Fish.*, **31**, 33–40.
91. Pratchett, M.S., Wilson, S.K. & Baird, A.H. (2006). Declines in the abundance of *Chaetodon* butterflyfishes following extensive coral depletion. *J. Fish Biol.*, **69**, 1269–1280.
92. Pratchett, M.S. (2007). Dietary selection by coral-feeding butterflyfishes (Chaetodontidae) on the Great Barrier Reef, Australia. *Raffles B. Zool.*, **14**, 155–160.
93. Reavis, R.H. (1997). The natural history of a monogamous coral-reef fish, *Valenciennesa strigata* (Gobiidae): 2. behavior, mate fidelity and reproductive success. *Environ. Biol. Fish.*, **49.2**, 247–257.
94. Rhyne A.L., Tlusty, M.F., Schofield, P.J., Kaufman, L., Morris Jr, J.A. & Bruckner, A.W. (2012). Revealing the appetite of the marine aquarium fish trade: the volume and biodiversity of fish imported into the United States. *PLoS ONE*, **7**, e35808.
95. Riedlecker, E. & Herler, J. (2009). Trophic morphology of the coral-associated genus *Gobiodon* (Teleostei: Gobiidae) from the Red Sea. *J. Zool. Syst. Evol. Res.*, **47**, 160–170.
96. Richards, W.J. (ed.) (2005). *Early Stages of Atlantic Fishes: An Identification Guide for the Western Central North Atlantic*. CRC Press, Boca Raton.
97. Ryan, S. & Clarke, K., (2005). Ecological assessment of the Queensland Marine Aquarium Fish Fishery. *Australian Government Department of Environment Heritage*.
98. Ruiz, L.J., Figueroa, R. & Prieto, A. (1999). Reproductive cycle of *Lactophrys quadricornis* (Pisces: Ostraciidae) from the northeast coast of Venezuela. *Rev. Biol. Trop.*, **47**, 561–569.
99. Sadovy, Y., Mitcheson, G. & Rasotto, M.B. (2001) Early development of the mandarin fish, *Synchiropus splendidus* (Callionymidae), with notes on its fishery and potential for culture. *Aquarium Sci. Conserv.*, **3**, 253–263.
100. Saenz-Agudelo, P., Jones, G.P., Thorrold, S.R. & Planes, S. (2009). Estimating connectivity in marine populations: an empirical evaluation of assignment tests and parentage analysis under different gene flow scenarios. *Mol. Ecol.*, **18**, 1765–1776.
101. Sustainable Aquarium Industry Association (SAIA) (2014) SAIA list of unsuitable speices 2009-2010, Available from <http://www.saia-online.eu/index.php/en/the-responsible-choice/fish-list> Accessed 17 Jan 2014.
102. Sustainable Aquarium Industry Association (SAIA) (2014) SAIA list of unsustainable species, 2009-2010, Available from <http://www.saia-online.eu/index.php/en/the-responsible-choice/fish-list> Accessed 17 Jan 2014.
103. Sakai, Y. & Kohda, M. (2001). Spawning timing of the cleaner wrasse, *Labroides dimidiatus*, on a warm temperate rocky shore. *Ichthyol. Res.*, **48**, 23–30.

ASSESSING VULNERABILITY OF FISH IN THE U.S. MARINE AQUARIUM TRADE

104. Sale, P.F., Eckert, G.J., Ferrell, D.J., Fowler, A.J., Jones, T.A., Mapstone, B.D. & Steel, W.J. (1986). *Aspects of the demography of seven species of coral reef fishes*. Great Barrier Reef Marine Park Authority, Townsville.
105. Sancho, G., Ma, D. & Lobel, P.S. (1997). *Ctenochaetus strigosus* (Acanthuridae). *Mar. Ecol. Prog. Ser.*, **153**, 311–315.
106. Schmidt, C. & Kunzmann, A. (2005). Post-harvest mortality in the marine aquarium trade: A case study at an Indonesian export facility. *SPC Live Reef Fish Bull.*, **13**, 3–12.
107. Scott, A., Malcolm, H.A., Damiano, C. & Richardson, D.L. (2011). Long-term increases in abundance of anemonefish and their host sea anemones in an Australian marine protected area. *Mar. Freshwater Res.*, **62**, 187–196.
108. Shapiro, D., Marconato, A. & Yoshikawa, T. (1994). Sperm economy in a coral reef fish, *Thalassoma bifasciatum*. *Ecology*, **75**, 1334–1344.
109. Shinozaki-Mendes, R.A., Hissa, F., Hazin, V., de Oliveira, P.G. & de Carvalho, F.C. (2007). Reproductive biology of the squirrelfish, *Holocentrus adscensionis* (Osbeck, 1765), caught off the coast of Pernambuco, Brazil. *Scientia Marina*, **71**, 715–722.
110. Sikkell, P.C. & Sikkell, N.M. (2012). First report of spawning and social organization in Hawaiian Ambon Toby, *Canthigaster amboinensis*. *Ichthyol. Res.*, **59**, 394–395.
111. Sponaugle, S., Grorud-Colvert, K. & Pinkard, D. (2006). Temperature-mediated variation in early life history traits and recruitment success of the coral reef fish *Thalassoma bifasciatum* in the Florida Keys. *Mar. Ecol. Prog. Ser.*, **308**, 1–15.
112. Springer, V.G. & Freihof, W.C. (1976). Study of the monotypic fish family Pholidichthyidae (Perciformes). *Sm. C. Zool.*, **216**, 1–43.
113. Srinivasan, M. & Jones, G.P. (2006). Extended breeding and recruitment periods of fishes on a low latitude coral reef. *Coral Reefs*, **25**, 673–682.
114. Stevenson, T.C., Tissot, B.N. & Dierking, J. (2011). Fisher behaviour influences catch productivity and selectivity in West Hawaii's aquarium fishery. *ICES J. Mar. Sci.*, **68**, 813–822.
115. Susilo, E.S., Harnadi, L. & Takemura, A. (2009). Tropical monsoon environments and the reproductive cycle of the orange-spotted spinefoot *Siganus guttatus*. *Mar. Biol. Res.*, **5**, 179–185.
116. Swearer, S.E. & Robertson, D.R. (1999). Life history, pathology, and description of *Kudoa ovivora* n. sp. (Myxozoa, Myxosporea): an ovarian parasite of Caribbean labroid fishes. *J. Parasitol.*, **85**, 337–353.
117. Takemura, A., Rahman, M.S., Nakamura, S., Park, Y.J. & Takano, K. (2004). Lunar cycles and reproductive activity in reef fishes with particular attention to rabbitfishes. *Fish Fish.*, **5**, 317–328.
118. Tanaka, Y. & Suzuki, K. (1991). Spawning, eggs and larvae of the hawkfish, *Cirrhitichthys aureus*, in an aquarium. *Jpn. J. Ichthyol.*, **38**, 283–288.
119. Thacker, C.E., Thompson, A.R. & Roje, D.M. (2011). Phylogeny and evolution of Indo-Pacific shrimp-associated gobies (Gobiiformes: Gobiidae). *Mol. Phylog. Evol.*, **59**, 168–176.
120. Thompson, E.D., Mayer, G.D., Walsh, P.J. & Hogstrand, C. (2002). Sexual maturation and reproductive zinc physiology in the female squirrelfish. *J. Exp. Biol.*, **205**, 3367–3376.
121. Thornhill, D.J. (2012). *Ecological impacts and practices of the coral reef wildlife trade*. Defenders of Wildlife, Washington, DC.

ASSESSING VULNERABILITY OF FISH IN THE U.S. MARINE AQUARIUM TRADE

122. Thresher, R.E., Colin, P.L., Bell, L.J. (1989). Planktonic duration, distribution and population structure of western and central Pacific damselfishes (Pomacentridae). *Copeia*, **1989**, 420–434.
123. Thresher, R.E. (1984). *Reproduction in reef fishes*. T.F.H. Publications, Inc., Neptune City.
124. Tissot, B.N. & Hallacher, L.E. (2003). Effects of aquarium collectors on coral reef fishes in Kona, Hawaii. *Conserv. Biol.*, **17**, 1759–1768.
125. Tissot, B.N., Walsh, W.J. & Hallacher, L.E. (2004). Evaluating effectiveness of a marine protected area network in West Hawai'i to increase productivity of an aquarium fishery. *Pac. Sci.*, **58**, 175–188.
126. Tolimieri, N., Sale, P.F., Nemeth, R.S. & Gestring, K.B. (1998). Replenishment of populations of Caribbean reef fishes: are spatial patterns of recruitment consistent through time? *J. Exp. Mar. Biol. Ecol.*, **230**, 55–71.
127. Tricas, T.C. (1986). Life history, foraging ecology, and territorial behavior of the Hawaiian butterflyfish, *Chaetodon multicinctus*. Doctoral Dissertation, University of Hawaii at Manoa.
128. Vagelli, A. (1999). The reproductive biology and early ontogeny of the mouthbrooding Banggai cardinalfish, *Pterapogon kauderni* (Perciformes, Apogonidae). *Environ. Biol. Fish.*, **56**, 79–92.
129. Wabnitz, C., Taylor, M., Green, E. & Razak, T. (2003). From ocean to aquarium: the global trade in marine ornamental species. *UNEP-WCMC*.
130. Waldie, P.A., Blomberg, S.P., Cheney, K.L., Goldizen, A.W. & Grutter, A.S. (2011). Long-term effects of the cleaner fish *Labroides dimidiatus* on coral reef fish communities. *PLoS ONE*, **6**, e21201.
131. Walsh, W.J., Cotton, S.P., Dierking, J. & Williams, I.D. (2004). The commercial marine aquarium fishery in Hawaii 1976–2003. In: (ed. Friedlander, A.M.) *Status of Hawaii's coastal fisheries in the new millennium, revised*. Proceedings of the 2001 fisheries Symposium sponsored by the American Fisheries Society, Hawaii Chapter. Honolulu, HI, p. 129–156.
132. Wassef, E.A. & Hady, H.A.A. (1997). Breeding biology of rabbitfish *Siganus canaliculatus* (Siganidae) in mid Arabian gulf. *Fish. Res.*, **33**, 159–166.
133. Watson, D.L., Harvey, E.S., Kendrick, G.A., Nardi, K. & Anderson, M.J. (2007). Protection from fishing alters the species composition of fish assemblages in a temperate-tropical transition zone. *Mar. Biol.*, **152**, 1197–1206.
134. Website: <http://fishbase.org>. Accessed April – July 2013.
135. Website: <http://animaldiversity.ummz.umich.edu>. Accessed April – July 2013.
136. Website:
<http://animalworld.com/encyclo/marine/damsels/FijiBlueDevilDamsel.php>. Accessed April – July 2013.
137. Website: <http://australianmuseum.net.au>. Accessed April – July 2013.
138. Website: <http://a-z-animals.com/animals>. Accessed April – July 2013.
139. Website: <http://bioexpedition.com/moray-eel/>. Accessed April – July 2013.
140. Website: http://bioweb.uwlax.edu/bio203/2011/kovac_jenn/reproduction.htm. Accessed April – July 2013.
141. Website: <http://butterflyfish.net/>. Accessed April – July 2013.
142. Website:
<http://dept.lamar.edu/biology/Belize%20study%20abroad/belize%20critter%20pages/Marine/squirrel%20fish.htm>. Accessed April – July 2013.

ASSESSING VULNERABILITY OF FISH IN THE U.S. MARINE AQUARIUM TRADE

143. Website: http://en.cnki.com.cn/Article_en/CJFDTOTAL-SHDX199903005.htm. Accessed April – July 2013.
144. Website: <http://col.org/pages/994958/details>. Accessed April – July 2013.
145. Website: <http://fishkeeper.co.uk/site/databank/valentini-pufferfish-saddled-toby->. Accessed April – July 2013
146. Website: <http://nas.er.usgs.gov/queries/factsheet.aspx?SpeciesID=2303>. Accessed April – July 2013.
147. Website: http://ngm.nationalgeographic.com/ngm/0506/resources_cre.html#weblinks. Accessed April – July 2013.
148. Website: <http://oceanaquaristic.blogspot.com/2011/02/dendrochirus-zebra.html>. Accessed April – July 2013.
149. Website: <http://saltwater.tropicalfishandaquariums.com/Angelfish/KoranAngel.asp>. Accessed April – July 2013.
150. Website: http://theaquariumwiki.com/Lactoria_cornuta. Accessed April – July 2013.
151. Website: <http://wpbp.sinica.edu.tw/pdf/930.pdf>. Accessed April – July 2013.
152. Website: http://www.academia.edu/1935015/Reproductive_biology_of_the_squirrelfish_Holocentrus_adscensionis_Osbeck_1765_caught_off_the_coast_of_Pernambuco_Brazil. Accessed April – July 2013.
153. Website: http://www.aquariumofpacific.org/onlinelearningcenter/species/rockmover_wrasse. Accessed April – July 2013.
154. Website: <http://www.aquaticcommunity.com>. Accessed April – July 2013.
155. Website: <http://www.bareefers.org/forum/index.php?threads/bartletts-anthias-pseudanthias-bartlettorum-breeding.11576/>. Accessed April – July 2013.
156. Website: <http://www.buzzle.com/articles/puffer-fish.htm>. Accessed April – July 2013.
157. Website: <http://www.demogr.mpg.de/longevityrecords/0503.htm>. Accessed April – July 2013.
158. Website: http://www.fishdb.com/db/salt/specimen/Moorish_Idol.php. Accessed April – July 2013.
159. Website: <http://www.fishforums.net>. Accessed April – July 2013.
160. Website: <http://www.freshmarine.com/porcupine-puffer.html>. Accessed April – July 2013.
161. Website: http://www.huffingtonpost.com/2013/01/09/invasive-fish-florida-keys-humpback-grouper_n_2440774.html. Accessed April – July 2013.
162. Website: http://www.malawicichlidhomepage.com/other/balistapus_undulatus.htm. Accessed April – July 2013.
163. Website: <http://www.marinebreeder.org/forums/viewtopic.php?t=959>. Accessed April – July 2013
164. Website: <http://www.montereybayaquarium.org/animals/AnimalDetails.aspx?enc=wlXqL0lOsSx7T5ov0Rio7A>. Accessed April – July 2013.
165. Website: <http://www.orafarm.com/products/fish/dottybacks/orchid/>. Accessed April – July 2013.
166. Website: <http://www.reefcentral.com/forums/showthread.php?t=1457232>. Accessed April – July 2013.
167. Website: <http://www.reefprotect.org/>. Accessed April – July 2013.

ASSESSING VULNERABILITY OF FISH IN THE U.S. MARINE AQUARIUM TRADE

168. Website:
http://www.sefsc.noaa.gov/sedar/download/S19_RD29_Andrews_natural%20mortality%20chapter_5_22.pdf?id=DOCUMENT. Accessed April – July 2013.
169. Website: http://www.sms.si.edu/irlspec/pterois_volitans.htm. Accessed April – July 2013.
170. Website: <http://www.tfhmagazine.com/saltwater-reef/species-profiles/arothron-nigropunctatus.htm>. Accessed April – July 2013.
171. Website: <http://www.thatpetplace.com/Balistapus-undulatus-undulated-trigger-208329>. Accessed April – July 2013.
172. Website:
http://www.thepufferforum.com/forum/ug.php/v/PufferPedia/Marine/A_Nigropunctatus/. Accessed April – July 2013.
173. Website: <http://www.wetwebmedia.com>. Accessed April – July 2013.
174. Website: <http://www.wri.org/project/reefs-at-risk>. Accessed April – July 2013.
175. Website: www.advancedaquarist.com. Accessed April – July 2013.
176. Website: www.bluezooaquatics.com. Accessed April – July 2013.
177. Website: www.fishchannel.com. Accessed April – July 2013.
178. Website: www.fishlore.com. Accessed April – July 2013.
179. Website: www.freeinfosociety.com. Accessed April – July 2013.
180. Website: www.liveaquaria.com. Accessed April – July 2013.
181. Website: www.marinescene.com. Accessed April – July 2013.
182. Website: www.petco.com. Accessed April – July 2013.
183. Website: www.reefkeeper.co.uk. Accessed April – July 2013.
184. Website: www.reefkeeping.com. Accessed April – July 2013.
185. Website: www.reeframblings.co.uk. Accessed April – July 2013.
186. Website: www.saltwaterfish.com. Accessed April – July 2013.
187. Website: www.theaquariumwiki.com. Accessed April – July 2013.
188. Website: www.wikipedia.com. Accessed April – July 2013.
189. Webster, M.S. (2003). Temporal density dependence and population regulation in a marine fish. *Ecology*, **84**, 623–628.
190. Williams, D.M., English, S. & Milicich, M.J. (1994). Annual recruitment surveys of coral reef fishes are good indicators of patterns of settlement. *B. Mar. Sci.*, **54**, 314–331.
191. Williams, I.D., Walsh, W.J., Claisse, J.T., Tissot, B.N. & Stamoulis, K.A. (2009). Impacts of a Hawaiian marine protected area network on the abundance and fishery sustainability of the yellow tang, *Zebrasoma flavescens*. *Biol. Conserv.*, **142**, 1066–1073.
192. Wilson, J. & Osenberg, C.W. (2002). Experimental and observational patterns of density-dependent settlement and survival in the marine fish *Gobiosoma*. *Oecologia*, **130**, 205–215.
193. Wilson, S.K. (2004). Growth, mortality and turnover rates of a small detritivorous fish. *Mar. Ecol. Prog. Ser.*, **284**, 253–259.
194. Wittenrich, M.L. & Munday, P.L. (2005). Bi-directional sex change in coral reef fishes from the family Pseudochromidae: an experimental evaluation. *Zool. Sci.*, **22**, 797–803.
195. Yanagisawa, Y. (1982). Social behaviour and mating system of the gobiid fish *Amblyeleotris japonica*. *Jpn. J. Ichthyol.*, **28**, 401–422.
196. Yasir, I. & Qin, J.G. (2007). Embryology and early ontogeny of an anemonefish *Amphiprion ocellaris*. *J. Mar. Biol. Assoc. U.K.*, **87**, 1025–1033.
197. Young, M.A.L. & Bellwood, D.R. (2012). Fish predation on sea urchins on the Great Barrier Reef. *Coral Reefs*, **31**, 731–738.

ASSESSING VULNERABILITY OF FISH IN THE U.S. MARINE AQUARIUM TRADE

198. Zekeria, Z.A., Weertman, S., Samuel, B., Kale-ab, T. & Videler, J.J. (2006). Growth of *Chaetodon larvatus* (Chaetodontidae: Pisces) in the southern Red Sea. *Mar. Biol.*, **148**, 1113–1122.