

Large-scale Natural Hybridization of Pufferfish Species Discovered!

- A large-scale natural hybridization between *Takifugu snyderi* (Shosai-fugu) and *T. stictonotus* (Goma-fugu) is discovered.
- Majority of putative hybrids are F1 hybrids.
- Future research will develop techniques to discriminate between hybrids and pure species.

Eleven of the 25 pufferfish species belonging to the genus *Takifugu* are edible. Of the 11 species, several exhibits considerable intraspecific morphological variation. Hybrids between two different parent species are also known to exist; however, it is extremely difficult to identify the parent species of a hybrid based on morphology alone, which is important as the toxin-containing tissues of hybrids can differ from those of the parent species. Consequently, hybrid fish are currently excluded from catches. However, the ability to reliably discriminate hybrids from pure species could facilitate processing and lead to greater safety and peace of mind for consumers.

National Fisheries University, Japan Fisheries Research and Education Agency is therefore creating a DNA database of pufferfish species to develop IT-based methods for discriminating between hybrids and pure species.

Identification of an unknown pufferfish species that started to be caught in large numbers off the coasts of Ibaraki, Fukushima, and Iwate prefectures in 2012 had been a problem in the fugu fishery. DNA analysis of 252 specimens caught in these prefectures between 2012 and 2014 revealed that 149 of the specimens were hybrids between *T. snyderi* and *T. stictonotus*, consisting of 131 F1 hybrids and 18 backcrosses with either of the parent species.

To the best of our knowledge, such large-scale natural hybridization has not been observed in any other marine fish in the wild. In addition to closely monitoring this phenomenon, we aim to develop methods to discriminate between hybrids and pure species.



