Researchers conclude popular rockfish is actually two distinct species

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Original species of Blue Rockfish

A new analysis confirms that the Blue Rockfish (Sebastes mystinus), a popular and commercially significant rockfish sought by anglers primarily off the California and Oregon coasts, is actually two separate and distinct species.

Previous studies had discovered some genetic differences between two groups of Blue Rockfishes, but their status as distinct species had never been proven until researchers at Oregon State University, the Oregon Department of Fish and Wildlife, and the California State University,

Los Angeles, demonstrated distinguishing differences in anatomy, coloration, geographic distribution and genetics.

Results of the study have been published in the *Fishery Bulletin*.

"Various researchers have written about the Blue Rockfish for years but it has never been morphologically described as two separate species," said Ben Frable, an OSU graduate student in the Department of Fisheries and Wildlife and lead author on the study. "There are physical, genetic, and apparent behavioral differences between the two species."

Frable and his team named the newly described species Deacon Rockfish (Sebastes diaconus) – a tribute to the nickname given Blue Rockfish by Portuguese fishermen around San Francisco in the 19th century. They called it the "priest fish" because the white bands around its head resembled a clerical collar.

D. Wolfe Wagman, a marine biologist with ODFW and co-author on the study, said the discovery may in the future alter how resource managers approach rockfish harvest regulations, which have been partially restricted in 2015.

Under a federally established management system, Blue Rockfish are counted as a single species belonging to the "minor near-shore rockfish complex," which saw significant reductions in allowable harvest in 2015. In addition to Blue Rockfish, this complex of 11 species includes China, Quillback and Copper rockfishes – all three of which cannot be legally harvested by recreational fishers in Oregon this year – thus concentrating angling efforts on Black and Blue rockfishes, Wagman said.

Newly identified Deacon Rockfish

"Black Rockfish are the major target of the complex and have a separate quota, set at 440 metric tons," Wagman said. "But the Blue Rockfish quota is much lower and ODFW is concerned that if fishing efforts exceed that quota, then all groundfish fishing would have to stop in Oregon because even incidental catch and release of Blue Rockfish would exceed the quota."

However, the discovery of the new Blue Rockfish species throws a different wrinkle into the equation. The original species, Sebastes mystinus, is more prevalent in California, while the newly identified Deacon Rockfish is found from northern California all the way to the Salish Sea near Vancouver, B.C.

Both groups are found off the Oregon coast.

"This may eventually lead to separate quotas, but as of now – as long as they are still categorized in the 'minor near-shore rockfish complex' – they have to be managed as one group with China, Quillback, Copper

and other rockfishes in the complex," Wagman said.

Brian Sidlauskas, an OSU ichthyologist and the university's Curator of Fishes, said there is no reason to believe that either species of Blue Rockfish is endangered, but that population surveys need to be done.

"The original Blue Rockfish (Sebastes mystinus) is considered exploited in parts of California, but the Deacon Rockfish seems fairly robust from Oregon northward," Sidlauskas said. "In some areas, you find the two species together, yet we haven't seen any evidence of hybridization."

Wagman approached Sidlauskas in 2012 and asked him to formally study the taxonomy of the Blue Rockfish. Andres Aguilar, a fish scientist from California State University, Los Angeles, who had participated in some of the earlier genetic analysis, joined the team as did Frable, who was tasked with examining the historical record, including preserved specimens housed in ichthyological collections throughout the U.S. and Canada.

Those records date back to the 1800s and Frable examined 130 museum specimens collected from Vancouver Island to northern Baja Mexico to look for differences and similarities in fish caught over the past century. To formally "describe" the two species, Frable and colleagues measured their spines, scales, eye width, dorsal fin length, tip-to-tail length, and other characteristics; and quantified differences in body shape, proportion and growth. Some of the 35 measurements were clearly distinct between the species.

"There are also some possible differences that may require more research," Frable said. "In talking with port samplers, it seems like Deacon Rockfish are caught in slightly deeper waters, while the original Blue Rockfish is more often found closer to shore. That could prove to be helpful from a management standpoint."

Sidlauskas said the research underscores the importance of preserving historical collections of fishes and other species.

"Ben had access to a network of ichthyology collections that provide a wealth of data over time and space," he pointed out. "Some of these fish were preserved 120 to 130 years ago, and that historical perspective is invaluable in providing context for what we see today."

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