

Water transfer determines the regional spread dynamics of non-native fish species

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Introduction

Native fish are important to aquatic ecosystems. Healthy fish populations tend to mean healthier aquatic environments. Conserving native fish is part of a larger movement to conserve the planet's biodiversity. Increased biodiversity leads to better ecosystem services. Fish provide many services to humans and ecosystems. Some native fish may not be economically important, but protecting these native species is still important. Like humpback whales, much native fish can only exist in one environment. That is, some species he is found only in one place on earth. Many believe that native fish have a right not to go extinct for economic reasons. In fact, enough people think that this is federal and state law. For the species, the benefits to humans are clear. Is there a reason to keep them, or can they be replaced by introduced species that better support human economic goals? Our recent study on scalp in provided an idea to shed light on the debate. Sculpins are small bottom-dwelling freshwater fish and one of the most abundant native fish schools in California. Most Californians are unfamiliar with these fish. Due to their small size, general abundance, and general reluctance to take hooks, bullheads have been largely ignored.

Discussion

But this oversight helps make them special. Because they were neglected, their history reflects the natural history of California's waterways. By studying native fish such as bullheads, we can learn which freshwater systems were historically connected/separated and how long ago it was. How do they get this information? Fortunately, it's stored in their DNA. An organism's DNA contains blueprints or codes that are unique to that particular individual. However, the overall code for the species is nearly identical, with only minor differences between individuals. These variations directly reflect where and chance the species was found, both of which allow or prevent the code from being passed on to future generations. By assigning specific variations to specific regions, we can understand how and when species

were introduced into the system and provide indications of historical connections. For example, some bullheads found in the Pitt River are actually from the Snake River system in Idaho. The same data support geological evidence that the Pitt River actually once flowed in the opposite direction of its current flow. Changes in bullhead DNA structure are also correlated with different ecological conditions. There's a reason there are different sculpins in different regions. Each is adapted to local ecological conditions and is part of a specific freshwater system.

Conclusion

We rely on these systems to condition, purify, and filter our water, and they work efficiently and with little effort. The key idea here, therefore, is ecology and ecological 'systems', consisting of multiple species that have evolved cooperatively to achieve these outcomes. If you could glean so much knowledge from just one species group, imagine the other information contained in the DNA of dozens of other species unique to that state. Besides risking loss, it shows that the well-being of some of our vital freshwater ecosystems may not be stable.

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Conflict of Interest

The author declares there is no conflict of interest in publishing this article.

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