

Inheritors of the Waters: Convergence, Resilience and Destinies of Freshwater Fishes during the Anthropocene

This talk will examine the future of freshwater fish ecology and evolution from perspectives offered in two recent books. Chris Thomas's *"Inheritors of the Earth"* proposes that some species will be 'losers' (vulnerable to extinction) and others 'winners' (cultivated or able to adapt to a human-dominated world) as humans continue to impact the biosphere. He claims that, despite numerous extinctions, many regions will experience a net increase in biodiversity from human-assisted invasions and adaptive evolution and speciation by alien organisms. In light of these provocative claims, I examine an idea presented in Jonathan Losos's book *"Improbable Destinies"*, which is that evolution is, to some degree, predictable. Losos cites considerable evidence for both niche convergence and niche conservatism. I will address these issues based on research on fish ecology and evolution conducted by my lab. Will future fish faunas be depauperate and comprised of generalist (tolerant) species and those farmed for food or aquaria? How fast and effectively will species adapt to future environmental conditions, and what will those conditions be like? Will there be new adaptive radiations that generate functional diversity, and will it be the same or different from that observed today?