Peregrine Falcons as a biomonitor: a local study taken to a continental scale

Abstract:  I document research I've conducted on Peregrine Falcons from 2004-2019: work that began in southern Nevada with a population status update, habitat use modeling, and developing survey methodology, and gradually began including a dietary analysis, territory turnover, mercury (Hg) contaminant analysis, and population genetics.  Collaborations expanded my peregrine work to include research in various locations across the U.S., and my Hg research began including several other species of raptor and other birds.  The known peregrine population in my primary southern Nevada study area increased from 14 to 33 territories during my first seven years, and from a minimum of 25 territories statewide in 2004 to an estimate of over 90 territories by 2019.  Meanwhile I documented Hg in all peregrines tested (n = 78) across the state, with a mean of 17.2 ppm in feathers (range 1.3-42.5 ppm) of southern Nevada peregrines and a corresponding drop in annual territory occupancy from 94-77%.  Analysis of Hg in feathers of peregrines along coastal Washington from 2003-2015 (n = 151) indicated a mean of 23.1 ppm in after-hatch-year peregrines, but with a declining trend over time in hatch-year peregrines.  Similarly, all peregrines tested from high latitudes in North America (n = 518) were contaminated with Hg, but to a lesser degree (adult mean = 10.3 ppm; range 0.1-62.7 ppm).  My research is ongoing, but collectively these studies indicate widespread Hg contamination across North America, and the species' broad dietary breadth and widescale distribution across nearly all habitat types across North America suggests they could be an ideal avian biomonitor for Hg contamination.