October 6, 2016

VIA EMAIL (suzanne.d.case@hawaii.gov)

Suzanne D. Case, Chairperson
Hawaii Department of Land and Natural Resources
1151 Punchbowl Street
Honolulu, HI 96813

Re: Improved Science Necessary for Newell's Shearwater

Dear Ms. Case:

In spite of extensive knowledge of overfishing in Hawaiian waters, El Niño, ocean temperature rise, and general agreement that these factors likely affect them, no studies have been performed that assess the impact on Newell's Shearwater from oceanic factors [see KIUC, 2010]. Instead scientific studies have consistently focused solely on terrestrially based impacts in attempting to explain the observed decline of these Shearwaters.

This trend starts with the earliest and most influential studies. These include Ainely et. al. (2001), Day (2003), and Cooper and Day (1995). These were used as the scientific basis for the Kauai Island Utility Cooperative Short-Term Seabird HCP, which influenced the expenditure of millions of dollars.

The Department has followed and extended this thinking. In a 2011 study funded by DLNR [Griesemer and Holmes, 2011], the authors focus solely on terrestrial factors, primarily predation, to explain the entire 6% to 10% per year decline of Newell's Shearwater. To do this, they must assume that predation alone will reduce birth rate by an incredible 80%. This paper is then cited by an Endangered Species Recovery Committee in 2014, as one basis for a policy decision.

DLNR public statements reflect the same thinking. These never mention that oceanic factors might affect our seabirds. Instead we are told relentlessly that lighting (including football stadium lights), electrical power wires, and predators (especially cats) are causing the decline of this species.

And yet, Hawaiian fishery data, recent research, and NOAA data suggest this thinking is flawed. All of these sources, which I will briefly outline below, show that Newell's Shearwater are likely facing very significant challenges from multiple oceanic factors.

Newell's Shearwater spends 75% of its life at sea. All of its food comes from the ocean. Lowered food supplies from human overfishing and changes in ocean productivity will plausibly lower the biological carrying capacity for the species and lower the birth rate. Changing global weather phenomenon will add to these challenges.

There is ample evidence to conclude that commercial fishing has very significantly impacted the food supply of Newell's Shearwater. National Oceanic and Atmospheric Administration data shows that nearly 100% of all fish stocks in the Hawaiian Large Marine Ecosystem are overexploited or have

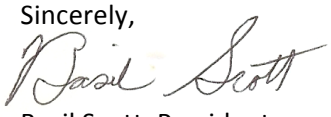
collapsed [Aquarone and Adams, NOAA]. Fishing productivity measures indicate that total commercial fish biomass in Hawaii has declined almost 30% since 1999 [Pan and Walden, 2015]. Large predator fish declined 60% between 1995 and 2011 [Polovina et. al., 2013]. Tuna, identified as critical in driving Newell's Shearwater prey to the surface, declined nearly 10% per year between 1996 and 2006 [Polovina et. al., 2009].

Climate change is likely affecting Newell's Shearwater as well. Weather patterns have affected ocean productivity and monk seal populations [Baker et. al. 2012], including pup seal survival [Polovina et. al. 2015]. These effects have been correlated with the Pacific Decadal Oscillation (PDO), a northern hemisphere weather phenomenon. Wouldn't the PDO impact Newell's Shearwater in similar ways? The well-known El Niño, a southern hemisphere weather phenomenon, has dramatically increased in the last two decades [NOAA data]. Large El Niño events may result in extraordinarily long Newell's Shearwater migrations [Ainley et. al. 1997]. When birds that have travelled a thousand miles more than normal return to Kauai, will they successfully breed?

Correcting this deficiency in viewpoint and understanding is extremely important. If, as in the case of African penguins [Crawford et. al., 2007], overfishing and competition with humans has led to an 80% to 90% population decline from historical values, then species recovery plans and actions should be based on this reality. Without understanding the species impacts from oceanic factors, it is not possible to properly understand terrestrial impacts and to what extent terrestrially based actions can help the species to recover.

It is my sincere hope, and my request as a taxpayer, that the Department will begin to address the impact of oceanic changes on the Newell's Shearwater. An analytic modeling study that includes oceanic factors based on readily available data would be a start.

Sincerely,



Basil Scott, President
Kauai Community Cat Project
6931 Pomaikai Street
Kapaa, HI 96746

Attachment: Referenced Studies

CC:
Kauai Island Utility Cooperative
County Council, County of Kauai
The Garden Island Newspaper
Dr. David Duffy, The University of Hawaii, Pacific Cooperative Studies Unit
US Fish and Wildlife Service, Pacific Region, Portland Oregon
NOAA, National Maritime Fisheries Service, Pacific Islands Regional Office

## Referenced Studies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Ainley et. al., 2001: *The Status and Population Trends of the Newell's Shearwater on Kauai: Insights from Modeling*, Studies in Avian Biology No. 22:108-123, 2001

Aquarone and Adams, NOAA: *XIX-63 Insular Pacific-Hawaiian: LME #10*, http://www.lme.noaa.gov/index.php?option=com_content&view=article&id=62:insular-pacific-hawaiian-lme-10&catid=16&Itemid=114

Baker et. al. 2012, *Relative influence of climate variability and direct anthropogenic impact on a sub-tropical Pacific top predator, the Hawaiian monk seal*, Mar Ecol Prog Ser, doi: 10.3354/meps09987

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Crawford et. al. 2007, *An altered carrying capacity of the Benguela upwelling ecosystem for African penguins (Spheniscus demersus)*, ICES Journal of Marine Science, 64: 570–576

Day 2003: Robert H. Day, Brian A. Cooper, and Thomas C. Telfer, (*2003) DECLINE OF TOWNSEND'S (NEWELL'S) SHEARWATERS (PUFFINUS AURICULARIS NEWELLI) ON KAUAI, HAWAII*. The Auk: July 2003, Vol. 120, No. 3, pp. 669-679.

Griesemer and Holmes, 2011: *Newell's shearwater population modeling for Habitat Conservation Plan and Recovery Planning*, PCSU Study

KIUC 2010, *Short-Term Seabird Habitat Conservation Plan*

NOAA data for El Niño at www.ncdc.noaa.gov/teleconnections/enso/indicators/sst.php

Pan and Walden, 2015, *Measuring Productivity in a Shared Stock Fishery: A case Study of the Hawaii Longline FIshery,* Marine Policy 62 (2015) 302–308

Polovina et. al. 2009, *Increases in the relative abundance of mid-trophic level fishes concurrent with declines in apex predators in the subtropical North Pacific, 1996–2006*, Fish. Bull. 107:523–531 (2009).

Polovina et. al. 2013: *Fishery-Induced Changes in the Subtropical Pacific Pelagic Ecosystem Size Structure: Observations and Theory*, Plos One

Polovina et. al. 2015, *The Transition Zone Chlorophyll Front updated: Advances from a decade of research*. Prog. Oceanogr.