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Data Article

Data on environmental contaminants in sea turtle eggs at Venu Island, Kaimana – West Papua, Indonesia

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ABSTRACT

Long-range atmospheric transport of contaminants can result in contamination of aquatic systems in otherwise pristine areas. Contaminants enter aquatic systems largely as inorganic pollutants that often are microbially transformed. The result can be a potent neurotoxin with a strong tendency to biomagnify within food chains. The general human population is exposed to contaminants such as mercury, predominantly through food consumption. Here, we report data on contaminants from a sample of green and hawksbill turtle that were sampled from a subset of two nests during the 2016 nesting season at Venu Island, Kaimana. Three contaminants (mercury, cadmium, arsenic) found in eggs exceeded safety limits for human consumption. Other contaminants such as lead, zinc, manganese, copper and iron were found below the established safety standard.

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Specifications table

Subject	Pharmacology, Toxicology and Pharmaceutical Science: Toxicology
Specific subject area	Environmental Contaminants in Sea Turtle Eggs
Type of data	Data of contaminants in Table
How data were acquired	GBC 906 AA model atomic absorption spectrophotometer complete with inbuilt window-based 906 program software was used in this analysis
Data format	Raw [Kind and content of contaminants in sea turtle eggs]
Parameters for data collection	Contaminants (mercury, cadmium, arsenic, lead, zinc, iron, and copper) in sea turtle eggs
Description of data collection	Eggs were analysed for contaminants using an Atomic Absorption Spectrometer (AAS)
Data source location	Institution: Research Centre of Pacific Marine Resources (RCPMR) – University of Papua (UNIPA) City/Town/Region: Venu Island, Kaimana – South of Bird's Head Seascape – West Papua Country: Indonesia Latitude and longitude: 04° 7'35S; 134°36'40E
Data accessibility	Repository name: University of Papua (UNIPA) Library Data identification number: 063.PS/X/2016 Direct URL to data: http://repository.unipa.ac.id:8080/xmlui/handle/123456789/433
Related research article	Ricardo F. Tapilatu, Hengki Wona and Petrus P. Batubara. 2017. Status of sea turtle populations and its conservation at Bird's Head Seascape, Western Papua, Indonesia. Biodiversitas Vol. 18, Number 1, January 2017 Pages: 129-136. DOI: 10.13057/biodiv/d180119

Value of the data

- These data are the first reported environmental contaminants in sea turtle eggs in Kaimana, south of the Bird's Head Seascape (BHS) – Papua, Indonesia.
- These data are beneficial to provide recommendations that harvesting of turtle eggs and adults and juveniles of all four species of sea turtle at Kaimana be totally prohibited.
- These data have value. The health risk of consuming eggs contaminated with chemical compounds could potentially reduce the number of eggs collected for human consumption.
- These data allow further analysis to understand the connections between the foraging and nesting habitats and the pelagic phase of sea turtles in Kaimana and their relationships to contaminants.

1. Data description

Kaimana is one of several areas of the Bird's Head Seascape that sea turtles use during the nesting season [1]. Local villagers reported seeing sea turtles nesting on beaches in Lakahia and Venu Island. Sea turtles in Kaimana likely face a high risk of being harvested because of the nesting beach's proximity to human settlements [1]. In environmental assessments of heavy metals: cadmium and mercury warrant special attention because of their vast global distribution and high potential toxicity and carcinogenicity in humans. Data from numerous studies of these metals in sea turtles have indicated that their concentrations vary greatly by species, region, and tissue type. Cadmium, mercury, and lead have been documented in sea turtle eggs and hatchlings in concentrations known to cause toxic effects in other vertebrates [2,3].

The mercury content found in eggs from two subsets of nests exceeds safety limits for human consumption, 0.5 mg/kg [4] (Table 1). The World Health Organisation has adopted the United States Environmental Protection Agency guideline levels for mercury and recommends that food with mercury concentrations of 0.5 mg/kg or more should not be sold for human consumption. This suggests that the levels found in sea turtle eggs (up to 8.15 ppm) could be hazardous to human health. The cadmium levels found in eggs from five subsets of sea turtle nests from Venu Island exceeded established safety standards for seafood products, 0.5 mg/kg [4] (Table 1) and

Table 1
Assessment of contaminant content in a subset of sea turtle eggs collected from nests at Venu Island.

No	Parameter	Detection Limit	Level detected in green turtle eggs (unit: mg/kg)	Level detected in hawksbill turtle egg (unit: mg/kg)	Analysis Method
1.	Mercury (Hg)	0.004	0.421*	0.326*	APHA, 2012 3112-B, 3030-E
2.	Cadmium (Cd)	0.40	2.12*	2.31*	APHA, 2012 3111-B, 3030E
3.	Arsenic (As)	0.003	0.875*	0.569*	APHA, 2012 3114-B, 3030E
4.	Lead (Pb)	0.23	<0.23	<0.23	APHA, 2012 3111-B, 3030-E
5.	Zinc (Zn)	0.67	70.36	58.83	as above
6	Manganese (Mn)	0.53	<0.53	0.80	as above
7.	Copper (Cu)	1.2	4.33	3.65	as above
8.	Iron (Fe)	5.00	15.65	42.78	APHA, 2012 3500-Fe-B

* Exceeding safety limits.

may warrant concern for people who consume sea turtle tissue with high cadmium concentrations in the Kaimana region. In addition, arsenic levels found in eggs from five subsets of sea turtle nests from Venu Island exceeded established safety standards for seafood products, 0.5 mg/kg [4] (Table 1) and may warrant concern for people who consume sea turtle tissue with high arsenic concentrations in the Kaimana region.

Other contaminants such as lead, zinc, manganese, copper and iron were found below the established safety standard (Table 1).

2. Experimental design, materials, and methods

Large scale contaminants studies of sea turtles eggs have often been avoided because they require the sacrifice of eggs in a threatened and/or endangered population [5]. In 2016, three fresh sea turtle eggs each from a recently laid nest of green (*Chelonia mydas*) and hawksbill (*Eretmochelys imbricata*) sea turtles were collected randomly to be analyzed for contaminants (Table 1). The six collected eggs were stored in a refrigerator at the Research Centre of Pacific Marine Resources – University of Papua (UNIPA) in Manokwari. The eggs were then shipped to ProLing Laboratory – Faculty of Fisheries and Marine Science – Bogor Agricultural University, an accredited Environmental Laboratory in Bogor, West Java for heavy metals analysis. The analysis was undertaken using the American Public Health Association (APHA) 2012 Protocols on Metals by cold-vapor atomic absorption spectrometry: Mercury (3112-B, 3030-E)[6,7]; Cadmium, Lead, Zinc, Manganese and Copper (3111-B, 3030-E) [8,7]; Arsenin (3114-B, 3030-E) [9,7]; and Iron (3500-Fe-B) [10].

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships which have, or could be perceived to have, influenced the work reported in this article.

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Supplementary materials

Supplementary material associated with this article can be found, in the online version, at doi:10.1016/j.dib.2020.105778.

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