

## Traits of Fruits from Ranomafana National Park

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### Abstract

Wild fruits come in a tremendous diversity of shapes, forms, colors, aromas, and textures. Fleshy fruits have evolved to be attractive to animal seed dispersers, and this complex array of traits acts as a biological filter, promoting interactions with some frugivores while prohibiting others. Data on wild fruit traits are still lacking. Here we provide fruit trait data for 43 species we collected in Ranomafana National Park.

### Introduction

Seed dispersal is among the most important processes driving plant reproduction and forest regeneration. Many angiosperms have evolved to produce fleshy fruits that attract frugivorous seed dispersers [1]. Seed dispersal by frugivorous animals - or endozoochory - is particularly common in the tropics, where competition for light selects for larger and more energy-rich seeds [2]. Fleshy fruits have evolved multiple times and are produced by members of a majority of plant families [3].

Fleshy fruits show a tremendous diversity across multiple traits like color, shape, aroma, texture, and many others [4]. Given the functional diversity of frugivorous animals, fruit traits act as a strong filter shaping frugivore-plant networks [5], and fruit traits in turn have evolved in response to animal selection [6]. Traits that have been shown to be selected by animals include size [7], color [8–10], and scent [11]. These traits, in turn, have been shown to drive selection by animals, from size [12,13], to color [14], and scent [14–16].

While there is a growing understanding in the ecological function and evolution of fruits and fruit traits, many questions remain open, especially because most datasets are limited to either narrow geographical origins or specific taxonomic group. The goal of this short report is to make data we have collected in the last years publicly available to promote further integrative research on the ecology and evolution of wild fruits.

### Methods

Fruits were collected in Oct-Dec 2016, and again in Oct-Dec 2017. All samples were collected in the Talatakely part of Ranomafana National Park, eastern Madagascar. Fruits were collected fresh from the plants and immediately brought to the laboratory for processing. The data

reported here include color (recorded based on human classification), size (length, width), and mass. We also collected and report data on most common dispersal vectors. These are based on our own observations, as well as published sources [11,17–25].

## Results

All data are provided in the appendix below.

## Discussion

Not much to discuss, really. We hope someone finds these data useful.

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## APPENDIX - RAW DATA

Family	Genus	Species	MAX_PlantHeight_m
Anacardiaceae	Weinmenia	<i>Weinmannia rutenbergii</i>	
Anacardiaceae	Micronychia	<i>Micronychia macrophylla</i>	5
Araliaceae	Schefflera	<i>Schefflera sp</i>	
Araliaceae	Polyscias	<i>Polyscias sp</i>	
Aspargaceae	Dracaena	<i>Dracaena sp</i>	
Clusiacea	Calophyllum	<i>Calophyllum recedens</i>	
Clusiacea	Garcinia	<i>Garcinia goudotiana</i>	
Clusiacea	Garcinia	<i>Garcinia sp</i>	
Connaracea	Agelaea	<i>Agelaea pentagyna</i>	
Euphorbiaceae	Macaranga	<i>Macaranga myriolepida</i>	
Hypericacea	Psorospermum	<i>Psorospermum androsaemifolium</i>	4
Lauraceae	Cryptocarya	<i>Cryptocarya thouvenotii</i>	
Lauraceae	Cryptocarya	<i>Cryptocarya crassifolia</i>	
Lauraceae	Cryptocarya	<i>Cryptocarya sp</i>	
Melastomataceae	Clidemia	<i>Clidemia hirta</i>	1.5
Moraceae	Ficus	<i>Ficus botryoides</i>	25
Moraceae	Ficus	<i>Ficus lutea</i>	23
Moraceae	Ficus	<i>Ficus politoria</i>	8
Moraceae	Ficus	<i>Ficus reflexa</i>	30
Moraceae	Ficus	<i>Ficus tiliifolia</i>	25
Myrsinaceae	Maesala	<i>Maesa lanceolata</i>	
Myrtaceae	Eugenia	<i>Eugenia sp1</i>	
Myrtaceae	Psidium	<i>Psidium cattleianum</i>	
Myrtaceae	Syzygium	<i>Syzygium parkeri</i>	
Myrtaceae	Syzygium	<i>Syzygium emirnense</i>	
Oleaceae	Noronhia	<i>Noronhia incurvifolius (NA)</i>	
Piperaceae	Piper	<i>Piper sp</i>	
Pittosporaceae	Pittosporum	<i>Pittosporum pachyphyllum</i>	
Primulaceae	Oncostemum	<i>Oncostemum botryoides</i>	
Primulaceae	Oncostemum	<i>Oncostemum nervosum</i>	
Rubiaceae	Chassalia	<i>Chassalia sp</i>	
Rubiaceae	Chassalia	<i>Chassalia ternifolia</i>	
Rubiaceae	Coptosperma	<i>Coptosperma SP1</i>	
Rubiaceae	Danais	<i>Danais sp</i>	
Rubiaceae	Gaertnera	<i>Gaertnera brevipedicellata</i>	
Rubiaceae	Mussaenda	<i>Mussaenda arcuata</i>	
Rubiaceae	Mussaenda	<i>Mussaenda erectiloba</i>	
Rubiaceae	Psychotria	<i>Psychotria sp1</i>	
Rubiaceae	Pyrostria	<i>Pyrostria sp1</i>	
Rutaceae	Zanthoxylum	<i>Zanthoxylum tsahanimposa</i>	
Sapindaceae	Allophylus	<i>Allophylus arboreus</i>	
Sapindaceae	Tina	<i>Tina striata</i>	25
Verbenaceae	Clerondendrun	<i>Clerondendrum conysoides (NA)</i>	







Bird	Bats/flying fo Fish	Reptile	Megafaunal	Fruit_width_I	MIN_fruit_wi
0	0	0	0	5.55	
0	0	0	0	10.02	
1	1	0	0	4.56	
1	0	0	0	10.06	
0	0	0	0	11.13	
0	0	0	0	25.06	
0	0	0	0	62.96	
0	0	0	0	30.97	
0	0	0	1	1636.67	
1	0	0	0	4.78	
0	0	0	0	8.01	
1	0	0	0	17.17	
1	0	0	0	18.32	
0	0	0	0	23.22	
1	0	0	0	5.73	
0	0	0	0	39.43	
1	1	0	0	17.14	
1	0	0	0	9.82	
1	0	0	0	17.14	
0	0	0	0	31.72	
1	0	0	0	5.96	
0	0	0	0	37.10	
1	1	0	0	19.04	
1	0	0	0	11.80	
0	0	0	0	7.95	
0	0	0	0	10.79	
1	0	0	0	4.67	
1	0	0	0	9.50	
0	0	0	0	11.66	
1	0	0	0	7.54	
1	0	0	0	5.92	
1	0	0	0	3.80	
0	0	0	0	15.62	
				4.48	
0				11.48	
				8.58	
		0	0	11.79	
1	1	0	0	11.51	
1	0	0	0	9.79	
1	0	0	0	5.28	
1	0	0	0	6.27	
0				15.80	
				5.21	

Fruit_length_mm	seed_width_mm	Seed_length_mm	SeedMass_g	n	Number_Species	Fruit_color	Fruit_type
8.69						1.00	white
8.14			480.00			1.00	greenish-reddish
4.37							
9.54		<1				1.00	green
12.07			491.13			1.00	orange-brown
35.27							
62.42							
28.80			996.88			2.00	half green, half reddish
99.89							
4.74			20.96			1.00	purple
8.16							yellowish, yellowish stained
18.76	15.47	16.09				2.00	purple
16.24						1.00	green, purple
20.28							
6.19		<1		n			black, purple
37.07		<1		n		brown	fleshy, syncarpic
17.24		<1		n		red	fleshy, syncarpic
9.09		<1		n		orange	fleshy, syncarpic
17.24		<1		n		red	fleshy, syncarpic
30.88		<1		n		green, yellow	fleshy, syncarpic
5.91				n			white
22.98			3587.50			1.75	yellow
19.04				n			red
13.26	12.30	10.50				1.00	purple
7.83			200.00			1.14	purple
15.27	10.11	11.51					
5.17			30.00			1.00	red
10.44						1.00	green
10.89			312.78			1.00	white
7.23	5.22	5.30	118.50			1.00	pink
5.87						2.00	pink
3.80			18.28			1.20	purple, pink
11.04			792.67			1.35	brown
4.49						1.00	
11.58	5.66	6.60				1.00	red
14.05		<1		n			yellow
25.15				n			yellow
11.52	4.75	6.01	780.00			2.00	red
8.42			170.00			1.33	red
7.03	4.02	3.36					white
8.07						1.00	orange
12.55						1.00	yellow
7.18							black

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Overdoff 1993; Dew & Wright 1998; Razafindratsima & al, 2014; Nevo & al, 2018  
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Razafindratsima unpublished data; Nevo & al, 2018  
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Nevo & al, 2018  
Nevo & al, 2018

Razafindratsima & Dunham 2016