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Title is in **bold**; for plants family is included (for animals, use Order: Family).
Do not include taxonomic authorities in the scientific name.

Abundance and microhabitat use by the frog *Platymantis hazelae* (Anura: Ceratobatrachidae)

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Authors' names are spelled out, name and family name is this order. In all cases the addresses are numbered (also if there is just one for all the authors). Use asterisk (after the number) if correspondence author is not the first.

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Abstract. Introduction: Forest frogs that undergo direct development (no tadpole stage) rely heavily on moist microhabitats for their survival. **Objective:** To describe the abundance and microhabitat use and some aspects of the breeding behaviour of the threatened forest frog *Platymantis hazelae* in a tropical reserve. **Methods:** From September 2016 to February 2017, we surveyed *Platymantis hazelae* using 27 (400 m²) plots in Twin Lakes Balinsasayao-Danao Natural Park in Negros Oriental, Philippines. We measured 14 environmental variables for a principal component analysis (PCA). **Results:** Mean density was 30.56 ± 6.94 to 86.11 ± 15.65 ind./ha, the species was more abundant in higher moist habitats, and we found it mostly in Screwpine (*Pandanus*) leaf axils and leaves (51.56 %), followed by palm leaves (14 %). We present images and descriptions of oviposition and froglets. **Conclusions:** *P. hazelae* was abundant in the fresh and moist sub-montane and montane zones where microhabitats (e.g. screwpines) remain abundant.

“Abstract:” has five sections marked in **bold** and in exactly this format.

Key words: anuran; lowland; montane; *Pandanus*; phytotelmata; *Platymantis hazelae*; submontane.

Include 5-7 general subject words that do not appear in the title or abstract, in lower case and separated by semicolon.

Total words: 6449

State the total word number of the whole document (including tables, references and appendices) under the keywords.

The genus *Platymantis* is highly diverse, with 45 known species found in the Philippines, Palau, Fiji, New Guinea, and in the Admiralty, Bismarck, and Solomon Islands (Brown, Siler, Richards, Diesmos, & Cannatella, 2015). In the Philippines, dozens of newly discovered species, including many members of *Platymantis*, await formal description (Brown & Diesmos, 2009). Diesmos, Alcala, Siler, and Brown (2014) recently summarized many of these discoveries (e.g., *P. biak*) and a new phylogenetic hypothesis has been proposed for this group (Brown et al., 2015).

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Alcala (1962) conducted extensive observations on the breeding behaviour of Philippine frogs (including *Platymantis hazelae* Taylor, 1920), including life history and microhabitat use (e.g. leaf axils of screw pines), as well as oviposition sites; he also provided morphological description of the species’ embryos and froglets. *P. hazelae* has been known as nocturnal, sexually dimorphic (males slightly smaller, 21.8-28.2 mm SVL, with vocal sacs; females 26.2-52.2 mm SVL), and juveniles below 20 mm SVL (Alcala, 1962a, 1962b; Smith, 1990).

Citations are in parentheses, starting with the oldest and ending in the newest. If one author has several publications in the same year, distinguish them with a, b, c etc.

Write intervals without spaces

The goal of this paper was to describe the abundance and spatio-temporal distribution of *P. hazelae* based on a six-month survey during the rainy season (September 2016 to February 2017) in three forest zones (montane, sub-montane, and lowland). We also described some aspects of the species’ breeding behaviour and characters of embryos and developing froglets.

Write section headings (MATERIAL AND METHODS, RESULTS, DISCUSSION, REFERENCES, RESUMEN) centered, without bold, in upper case.

MATERIALS AND METHODS

Study site: The forests surrounding the Twin Lakes of Balinsasayao (Fig. 1) and Danao in Negros Oriental, Philippines, form part of an extensive tropical rainforest ecosystem within the 133 000 half the geothermal reserve of the Energy Development Corporation (formerly Philippine National Oil Company, PNOC). The area has an elevation range of ~ 650-900 m.a.s.l. near the lakes and extends to about 1 750 m.a.s.l. at the highest peak known as “Guinsayawan” towards the Southwest. A dome-shaped peak known as “Guintabon” is adjacent to the lakes in the North. A third, much smaller water body, known as “Kabalin-an” Lake, located Northwest of Guintabon has a maximum water surface area reaching ~3.4 ha in 2014 but reduced to only ~1.3 has during low rainfall months, notably right after the El Niño phenomenon in 2010.

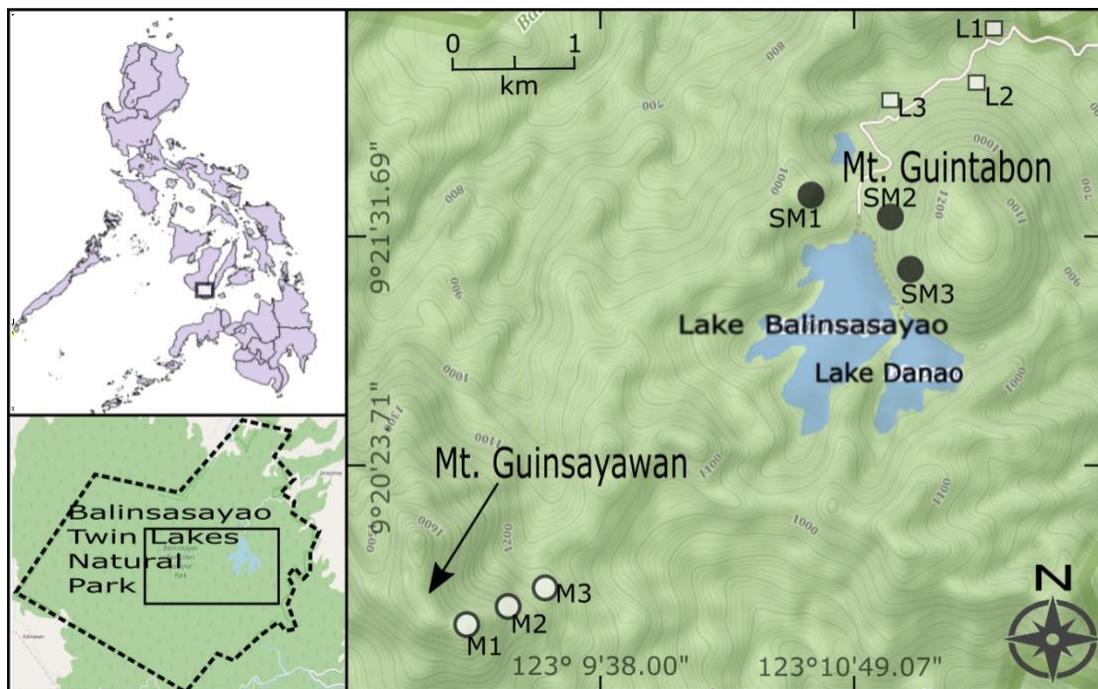


Fig. 1. Location of the study sites within Balinsasayao Twin Lakes Natural Park (montane sites indicated by M1-M3, submontane sites by SM1-SM3, and lowland sites by L1-L3). Inset: Philippine map and the boundaries of Balinsasayao Twin Lakes Natural Park. Map generated using QGIS® and OpenStreetMap®.

Photographs must be attached in original size and as separate JPG files (100 % quality compression). Labels must be sharp, in Times font, and proportional to the figure.

Geographic coordinates are written exactly in this abbreviated way:
(10°44'13"-11°00'37" N & 85°34'48"-85°58'51" W).

Three study zones were pre-determined based on the general description by Brown and Alcala (1961). The geographic coordinates of selected study zones are as follows, montane zone (10°44'13"-11°00'37" N & 85°34'48"-85°58'51" W), submontane zone (9°22'7.85" N & 123°11'9.92" E) and lowland zone (9°22'20.78" N & 123°11'19.00" E). In each zone, three sites were selected (where possible with minimal signs of human activities) and marked using a GPS unit. In each site, three replicate plots of 20 x 20 m were established, each corner marked with a flagging tape.

Subheadings are in bold, with colon, and immediately followed by text.

Environmental variables: Within each plot we measured 14 environmental variables, tree density, tree DBH, canopy cover, leaf litter mass, leaf litter depth, amount of rainfall, air temperature, fern height, fern density, relative humidity, altitude, tree height, density of palms, and screw pines (Table 1). Tree height was visually estimated by a trained research staff member while diameter at breast height (DBH) of each tree was measured using a tape measure. Tree density was expressed as the total count of individual trees (> 5 cm DBH) per plot and canopy cover was assessed using Ocular (Visual) Estimation Method, expressed in percent cover. Elevation was determined using a hand-held GPS unit (Garmin). Rainfall was monitored per site weekly or right after heavy rain downpour by a local assistant using an improvised rain gauge (10 cm wide cylinder). Air temperature and relative humidity (RH) as well as temperature and PCA plot was generated using the ggbiplot package in R platform (R Core Team, 2015). Interpretation of PCA was based on eigenvalues and projected inertia (%) using the ade4 package (Dray & Dufour 2007). Prior to multicollinearity test and subsequently PCA, data were $\log(x+1)$ transformed to address the presence of zeros (e.g. zero count of frog) in the dataset (Zar, 1999).

Units use the DECIMAL METRIC SYSTEM

Examples:

- 8 kg - (space between number and unit)
- 1 200 - (write thousands with a space instead of comma or period)
- 5.6 m - (use period for decimals, not comma)
- 58 % - (space before the % sign)

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TABLE 1

Average values of 14 environmental variables measured in each site in the three forest zones. A, B, and C are sites for each zone

Environmental variables	Lowland			Submontane			Montane		
	A	B	C	A	B	C	A	B	C
1. Air temperature (°C)	22.60	21.94	21.74	21.26	21.59	22.08	18.96	18.51	18.38
2. Relative humidity (%)	87.58	90.85	86.96	87.52	89.93	88.80	95.21	96.59	94.22
3. Elevation (m.a.s.l.)	655	700	780	953	930	900	1350	1330	1300
4. Rainfall (mm/hr)	0.49	0.5	0.47	0.73	0.69	0.72	3.17	3.15	2.8
5. Leaf litter wt. (kg)	1.42	0.50	0.79	0.99	1.65	1.14	1.39	1.73	1.42
6. Leaf litter depth (cm)	2.33	2.11	1.74	2.83	2.42	3.03	2.89	3.25	2.67
7. Tree DBH (cm)	10.26	19.46	23.44	21.89	17.98	19.10	20.76	14.07	15.73
8. Tree density (ind./400m ²)	21.67	11.67	10.00	35.00	62.33	62.00	43.00	29.33	29.33
9. Tree height (m)	8.06	11.86	15.03	14.57	16.70	16.53	14.85	12.95	15.03
10. Fern height (cm)	88.57	59.36	41.04	63.78	36.28	23.84	21.67	26.67	47.50
11. Canopy cover (%)	28.33	31.67	41.67	73.33	83.33	85.67	50.50	65.00	65.00
12. Pandanus (ind./400m ²)	1.00	0.00	0.67	15.00	7.00	5.00	10.00	8.33	32.33
13. Fern density (fronds/m ²)	21.00	13.33	15.33	34.00	20.33	15.33	4.00	8.00	10.10
14. Palm (ind./400m ²)	1.67	0.00	0.67	10.00	4.33	9.00	18.00	26.67	33.33

Elevation: Lowland (655-780 m.a.s.l.); Submontane (900-953 m.a.s.l.); and Montane (1 300-1

RESULTS

Abundance and spatio-temporal distribution: *Platymantis hazelae* was found only in the submontane and montane zones (Fig. 3, Fig. 4). The species was not found in the lowland sites, despite intensive search efforts over six months. In the submontane zone, the species was limited to only one site (Site 1) with densities ranging from 2.78-13.89 ind./ha. In the montane zone, the species was consistently encountered at 30.56-86.11 ind./ha (± 15.65 SE; N = 56). Most individuals of *Platymantis hazelae* found were males, except in November (montane zone), December, and February (submontane zone) (Fig. 4A, 4B). Juveniles of *P. hazelae* were observed only in November (montane zone) although outside of the study plots, eggs and embryos of this species were found in *Pandanus* leaf axils along the trail going to Guinsayawan (montane zone). Females of *P. hazelae* were rarely found, often only detected when pairs were found together.

Figures are cited as separated:
Use (Fig. 3, Fig. 4A, 4B).

N = 56 (N uppercase for sample number).

Frog abundance and distribution: Table 1 presents the ranges of environmental variables measured during the study (Table 1). When subjected to principal component analysis (PCA), among the 14 environmental variables, rainfall, altitude, relative humidity, were positively correlated with density of *P. hazelae* (Fig. 5). Similarly, Two-Way ANOVA with repeated measures over six months on relative humidity (RH) indicated a $P < 0.05$ for zone, indicating that zone significantly affects local humidity. However, month did have a significant effect (d.f. = 5, $F = 15$, $P < 0.001$), which indicates that the humidity levels recorded at various months are significantly different ($SS = 459.72$, $df = 5$, $F = 15$, $P < 0.001$). In addition, we detected a significant interaction between zone and month ($SS = 271.32$, d.f. = 10, $F = 27.13$, $P < 0.001$), suggesting that the relationship between month and RH depends on the identity of the area (zone) sampled (Table 2).

The word Figure is abbreviated to “Fig.”; “Table” starts with upper case.

The letters P, F, etc always in uppercase. Symbols separated by spaces.

DISCUSSION

The discussion must be brief, follow the same order of the results, and compare your results with previous literature. Analyze only **general results**: do not cite tables or figures here.

It should be pointed out that unlike the previous studies (e.g. rapid assessments on frog abundance by Amoroso et al. (2014), which relied only on male calls), this study quantified frog abundance by intensive searches within repeatedly visited study plots. Our abundance data are based on subjects either captured or directly observed by investigators. We consider our data more comprehensive, compared to previous surveys involving only counts of males detected by advertisement calls and multiplied by the factor of 2 (assuming 1:1 sex ratio), which Alcalá and Alcalá (2005) suggested might result in overestimating the actual number of individuals.

Platymantis hazelae was found only in the submontane and montane zones and was not microhabitats such as screw pines (*Pandanus*) and palms. While we documented a male sitting on top of an egg clutch, suggesting male-guarding behaviour, there is a need to conduct more observations. Observations of its breeding behavior suggest an extended embryonic period. We also noted dependence of newly metamorphosed juveniles on phytotelmata microhabitats.

ACKNOWLEDGMENTS

Acknowledgments are brief and only people who provided significant assistance is included, without titles (Dr., Mr., Mss., etc.)

We thank the Department of Science and Technology for funding the study as part of the first author’s MSc thesis. The Department of Environment and Natural Resources (DENR) and the rest of the Protected Area Management Board (PAMB) of Balinsasayao-Danao Natural Park is acknowledged for allowing the researchers to conduct this study.

RESUMEN



The *Resumen* (Spanish *Abstract*) has the same structure of the *Abstract*. If you are not fluent in Spanish, journal staff will translate it from your English *Abstract* at no charge.

Abundancia y uso de microhabitat por parte del sapo *Platymantis hazelae* (Anura: Ceratobatrachidae). **Introducción:** las ranas de bosque que se desarrollan directamente (sin etapa de renacuajo) dependen en gran medida de los microhábitats húmedos para sobrevivir. *hazelae* se encontró abundante en elevaciones más altas (zonas sub-montanas y montanas) donde la temperatura ambiente fue generalmente más baja, las precipitaciones y la humedad relativa más altas y los microhábitats (por ejemplo, screwpines) permanecen intactos y abundantes. **Objetivo:** xxx. **Métodos:** xxx. **Resultados:** xxx. **Conclusiones:** xxx.

Palabras clave: anuro; tierras bajas montano; *Pandanus*; phytotelmata; *Platymantis hazelae*; submontane.

REFERENCES

Alcala, A.C. (1962). Breeding behavior and early development of frogs of Negros, Philippine Islands. *Copeia*, 4, 679-726.

The initials of the name without spaces.

Journal name is followed by volume in italics, issue number without italics between parentheses, comma, space and page numbers. Use the short hyphen “-” instead of the long hyphen “-”.

Alcala, E.L., & Alcala, A.C. (2005). Aspects of ecology and threats to the habitats of three endemic herpetofaunal species on Negros and the Gigante Islands, Philippines. *Silliman Journal*, 46, 169-194.

Alcala, A.C., & Brown, W.C. (1982). Reproductive biology of some species of *Philautus* (Rhacophoridae) and other Philippine anurans. *Kalikasan*, 11(2-3), 203-226

Alcala, A.C., & Brown, W.C. (1998). *Philippine Amphibians. An Illustrated Field Guide*. Quezon City, Philippines: Bookmark Inc.

For books, chapter of edited book, and similar, use always City, Country: Publisher.

Diesmos, A.C., Alcala, A.C., Siler, C.D., & Brown, R.M. (2014). Status and conservation of Philippine amphibians. In H. Heatwole & I. Das (Eds.), *Conservation Biology of Amphibians of Asia* (4th ed., pp. 310-336). Malaysia: Natural History Publications.

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Chapter pages appear after book name, with period after pp.

R Core Team. (2015). *R: A language and environment for statistical computing*. R Foundation for Statistical Computing, Vienna, Austria. Retrieved from: <http://www.R-project.org/>

The name of the software with italics. The company or software developer, City, Country. Retrieved from + URL

Scheffers, B.R. (2013). *A quantitative assessment of arboreality in tropical amphibians across an elevation gradient, can arboreal animals find above-ground refuge from climate warming?* (Doctoral dissertation). National University of Singapore, Singapore.

When citing one author several times, use letters and order by date and number of authors.

Scheffers, B.R., Brunner, R.M., Ramirez, S.D., Shoo, L.P., Diesmos, A., & Williams, S.E. (2013a). Thermal buffering of microhabitats is a critical factor mediating warming vulnerability of frogs in the Philippine biodiversity hotspot. *Biotropica*, 45(5), 628-635.

Scheffers, B.R., Phillips, B.L., Laurance, W.F., Sodhi, N.S., Diesmos, A., & Williams, S.E. (2013b). Increasing arboreality with altitude, a novel biogeographic dimension. *Proceedings of the Royal Society of London B, Biological Sciences*, 280(1770), 1581.

Summers, K., & McKeon, C.S. (2004). The evolutionary ecology of phytotelmata use in Neotropical poison frogs. In R.M. Lehtinen (Ed.), *Ecology and Biology of Phytotelm-breeding Anurans* (No. 193, pp. 55-73). Miscellaneous Publications Museum of Zoology, University of Michigan.

Numbers, volumes or edition go inside the parenthesis, before pages number.

Zar, J.H. (1999). *Biostatistical Analysis* (4th Edition). New Jersey: Prentice Hall.

INTERNET REFERENCES (APA)

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