A test of the cross-scale resilience model: Functional richness in Mediterranean-climate ecosystems

Donald A. Wardwell
University of Nebraska - Lincoln

Craig R. Allen
University of Nebraska-Lincoln, callen3@unl.edu

Garry D. Peterson
McGill University, garry.peterson@su.se

Andrew J. Tyre
University of Nebraska-Lincoln, atyre2@unl.edu

Follow this and additional works at: http://digitalcommons.unl.edu/natrespapers
Part of the Natural Resources and Conservation Commons

http://digitalcommons.unl.edu/natrespapers/101

This Article is brought to you for free and open access by the Natural Resources, School of at DigitalCommons@University of Nebraska - Lincoln. It has been accepted for inclusion in Papers in Natural Resources by an authorized administrator of DigitalCommons@University of Nebraska - Lincoln.
A test of the cross-scale resilience model: Functional richness in Mediterranean-climate ecosystems

Donald A. Wardwell a,*, Craig R. Allen b, Garry D. Peterson c, Andrew J. Tyre d

a Nebraska Cooperative Fish and Wildlife Research Unit, 122 Hardin Hall, University of Nebraska-Lincoln, Lincoln, NE 68583, USA
b USGS - Nebraska Cooperative Fish and Wildlife Research Unit, 423 Hardin Hall, University of Nebraska-Lincoln, Lincoln, NE 68583, USA
c Department of Geography & McGill School of the Environment, McGill University, Montreal, Quebec, Canada H3A 2K6
d School of Natural Resources, 416 Hardin Hall, University of Nebraska-Lincoln, Lincoln, NE 68583, USA

ARTICLE INFO

Article history:
Received 2 January 2007
Received in revised form 16 November 2007
Accepted 30 November 2007
Published on line 22 January 2008

Keywords:
Diversity
Body mass
Scale
Discontinuity
Gap rarity index

ABSTRACT

Ecological resilience has been proposed to be generated, in part, in the discontinuous structure of complex systems. Environmental discontinuities are reflected in discontinuous, aggregated animal body mass distributions. Diversity of functional groups within body mass aggregations (scales) and redundancy of functional groups across body mass aggregations (scales) has been proposed to increase resilience. We evaluate that proposition by analyzing mammalian and avian communities of Mediterranean-climate ecosystems. We first determined that body mass distributions for each animal community were discontinuous. We then calculated the variance in richness of function across aggregations in each community, and compared observed values with distributions created by 1000 simulations using a null of random distribution of function, with the same n, number of discontinuities and number of functional groups as the observed data. Variance in the richness of functional groups across scales was significantly lower in real communities than in simulations in eight of nine sites. The distribution of function across body mass aggregations in the animal communities we analyzed was non-random, and supports the contentions of the cross-scale resilience model.

* Corresponding author. Tel.: +1 402 472 0449; fax: +1 402 472 2722.
E-mail addresses: wardwell@bigred.unl.edu (D.A. Wardwell), allencr@unl.edu (C.R. Allen), garry.peterson@mcgill.ca (G.D. Peterson), atyre2@unl.edu (A.J. Tyre).
1476-945X/$ – see front matter © 2007 Elsevier B.V. All rights reserved.
doi:10.1016/j.ecocom.2007.11.001

1. Introduction

Ecological processes are scale-specific in their effects, and create heterogeneous landscapes with scale-specific structure and pattern (Turner et al., 2001). Spatial and temporal heterogeneity, in turn, contributes to the structure of animal communities. Spatial patterns affect an organism’s ability to disperse, which in turn limits resource availability, gene flow, diversification, and other ecological processes (Turner et al., 2001; Coulon et al., 2004; Vignieri, 2005). Spatial and temporal patterns within landscapes are also reflected in animal body mass distributions (Allen and Holling, 2002).

The Textural Discontinuity Hypothesis proposed that body mass distributions of animal communities reflect landscape structure (Holling, 1992). Holling proposed that landscapes are structured by a relatively few key processes, each operating at distinct spatial and temporal scales. The actions of those processes and the scales at which they operate are reflected in
discontinuous patterns of structure and resource distribution upon landscapes. Discontinuous structure in landscapes may result in discontinuous, aggregated animal body mass patterns, which reflect the scales of structure available to animals within a given landscape. Discontinuous body mass distributions have been observed in numerous ecological systems and among several taxa, including birds, mammals, reptiles and amphibians, fish and bats (Allen and Holling, 2002).

Ecological resilience appears to be generated, in part, in the discontinuous structure of these complex systems (Peterson et al., 1998). Ecological resilience is a measure of the amount of change needed to transform an ecosystem from one set of processes and structures to a different set (Holling, 1973; Gunderson, 2000). An ecosystem with high resilience would require a substantial amount of energy to transform, whereas a low resilience system would transform with a relatively small amount of energy. Peterson et al. (1998) expanded upon Holling’s Textural Discontinuity Hypothesis by proposing that functional diversity within body mass aggregations and redundancy of functional groups across body mass aggregations (i.e., scales) increases resilience. Resilience is increased by overlap of function by species of different functional groups operating at similar scales. A diversity of function within a scale provides a system with a wide latitude of response to a variety of different perturbations. Redundancy of functional groups across scales provides reinforcement of function, increasing resilience. Having functions reinforced at different scales provides a system with a robust control of perturbations when they exceed controls at a given scale.

The model Peterson et al. (1998) proposed has not been tested. However, the authors suggest several potential tests of their cross-scale resilience model, including analysis of empirical data, simulations, and field experimentation. They proposed testing the idea that ecological function is distributed across scales by analyzing the distribution of functional groups and determining if species of the same functional groups are dispersed across scales. In this paper, we evaluate this proposition by analyzing the distribution of function across scales in mammal and bird communities of several Mediterranean-climate ecosystems in various regions of the world. Specifically, we determined the variance in the distribution of functional richness across scales. Low variance in functional richness across scales would indirectly indicate both elements of the cross-scale resilience model, functional diversity within scales and redundancy across scales.

### 2. Methods

Despite being geographically and evolutionarily isolated with flora and fauna differing among regions, Mediterranean-climate ecosystems are ecologically similar in structure and function (Di Castri and Mooney, 1973; Kalin Arroyo et al., 1995). They typically display high species diversity and are present in disparate regions of the world (Lavorel, 1999). Mediterranean-climate ecosystems are characterized by wet winters, dry summers, and mild temperatures. These systems occur in subtropical latitudes on the western coast of continental land masses (California, Chile, southwestern Australia, and the Cape Town area of South Africa) and the coast of the Mediterranean Sea (Davis and Richardson, 1995).

Species’ distributions and body mass estimates were determined for bird and mammal communities in several Mediterranean-climate ecosystems. Avian community species’ distributions were determined for Mediterranean ecosystems in San Diego County, California (Unitt, 1984), Spain (Cramp, 1978–1994), South Africa (Winterbottom, 1966) and southwestern Australia (Saunders and Ingram, 1995). All avian body masses were obtained from Dunning (1993), except for Spain which were determined from Cramp (1978–1994). Mammalian community species’ distributions and body mass estimates were determined for Mediterranean ecosystems in California (Quinn, 1990; Silva and Downing, 1995), South Africa (Smithers, 1983; Silva and Downing, 1995), Spain (Chelvan, 1991), Chile (Miller, 1980, corroborated with Redford and Eisenberg, 1992), and southwestern Australia (Strahan, 1995). Only species that had established breeding populations in each respective region were included, and non-indigenous species were not included. Pelagic birds and bats were excluded because they interact with their environment differently than terrestrial species (Allen et al., 1999). In all cases, adult male and female body masses were averaged.

Each community was analyzed for discontinuities in their body mass distributions. All species within a community were ranked in order of body mass. The logs of the body masses were calculated, and discontinuities were determined with the gap rarity index (GRI) (Restrepo et al., 1997; Allen and Holling, 2002; Stow et al., 2007). The GRI uses the GRI statistic, which is the probability that the observed discontinuities in the body size spectrum occur by chance alone, to compare observed body mass distributions with a unimodal null distribution that is produced by a kernel density estimator (Silverman, 1981), which smoothes the observed data into a continuous null. This null distribution was then sampled 10,000 times and an absolute discontinuity value:

\[ d_i = \log_{10}(\text{Mn} + 1) - \log_{10}(\text{Mn}) \]

was calculated for each species in each simulation. The ranked distribution of the observed body masses was compared with the distribution of the differences for the nth largest species from the simulations. The GRI for each species in the actual assemblage is the proportion of the simulated discontinuity values that were smaller than the observed discontinuity value. The significance of each GRI value was then determined by testing the null hypothesis that the value was drawn from a continuous distribution with an alpha of <0.05. Unusually large gap values were considered significant and determined the location of discontinuities that bound body mass aggregations. The results were confirmed by conducting a SAS Cluster analysis using the Ward option based on variance reduction (SAS Institute Inc., 1999).

Functional group classifications were determined for each species. A functional group is essentially the classification of an organism’s ecological “role”. For this study, we have defined functional groups as the combination of the species’ diet and foraging strata. Data on diet and foraging strata were collected from published sources (Cramp, 1978–1994; Brown et al., 1982; Smithers, 1983; Blakers et al., 1984; Urban et al., 1986; Ehrlich et al., 1988; Fry et al., 1988; Jameson and Peeters,
we generated 1000 permutations of the list of functional groups; a permutation randomly reorders a list without changing the elements of that list. The permutation preserves both the number of species in each aggregation, and the number of species in each functional group; only the relationship between functional groups and aggregations is randomized. For each permutation j we calculated the variance of functional richness across scales in the same way as for the observed data. The observed variance is then ranked within the randomized distribution. Output from the simulations is the proportion of runs with variance above, equal, and below that of the observed variance of functional richness across aggregations. If the output shows a lower variance in the simulated distributions of functional diversity than in the observed, then the hypothesis proposed by Peterson et al. – that functions tend to be distributed evenly across scales – is not supported. If the variance of functional richness across scales of the observed systems is smaller than the random distributions, the model of Peterson et al. (1998) is supported.

The combined above and equal proportions (hereafter, "above") from the simulated runs were tested for correlation with number of species in the community (N), number of body mass aggregations, and the number of functional groups.

3. Results

The body mass distributions of all the bird and mammal study communities were discontinuous (see Table 1). Distinct aggregations of body mass were detected among all sites with both methods. The number of aggregations ranged from four in the Chilean mammal community to 16 in the southwest Australian bird community. There were typically more aggregations in bird communities (ranging from 9 to 16) than in mammal communities (ranging from 4 to 9). This may be related to the higher number of species in the bird communities (81–141 species) than in mammal communities (27–65 species), and/or to differences in the manner in which terrestrial mammals and flighted birds interact with environmental structure.

The simulation runs produced greater proportions of variances ranked above or equal to the observed variance in all of the study sites, except Spain mammals (Table 1). The proportions of above and equal variances were higher in the bird communities of San Diego County (p = 0.996), Spain (p = 0.702), South Africa (p = 0.689), and southwestern Australia (p = 0.885), than in the mammal communities of California (p = 0.665), Spain (p = 0.152), South Africa (p = 0.582), Chile (p = 0.509) and southwestern Australia (p = 0.654). The ranking of above proportions were positively correlated with N (r = 0.65, p = 0.059), number of body mass aggregations (r = 0.60, p = 0.088), but not with the number of functional groups (r = 0.48, p = 0.194) (Table 1). The results of the correlation tests change dramatically when the data for Spain mammals, which is substantially different from the other eight replicates, is excluded. The ranking of above proportions, excluding Spain mammals, were positively correlated with N (r = 0.78, p = 0.021), number of body mass aggregations (r = 0.72, p = 0.044), and number of functional groups (r = 0.79, p = 0.021). Because the sample sizes were small, the expected power of each individual simulation is not
4. Discussion

Peterson et al.’s (1998) hypothesis which suggests that function should be non-randomly distributed within and across scales is supported by the results of our simulations (Table 1). Random simulations of functional distribution within and across body mass aggregations yielded distributions with higher variance of functional richness across scales than our data from Mediterranean-climate ecosystems. We did not test the relationship with resilience, as an effective method of estimating resilience is not yet known. However, our results do fit the predictions of the cross-scale resilience model proposed by Peterson et al. (1998), without explicitly testing it. The rankings of the observed data in the distribution generated by the null model were higher in avian communities than in mammalian communities. The four avian communities also had more species, more body mass aggregations, and more functional groups than did the mammalian communities. The correlations identify a positive relationship between these three variables and the rankings of the observed data. As the number of species, body mass classes, or functional groups increases, so does the proportion of above variances in the simulated runs. The relationship is substantially stronger when the Spain mammal data are excluded. Peterson et al. (1998) suggest that the process of interspecific competition could be the mechanism driving a non-random distribution of function within and across scales. Species of the same functional group, for example foliage insectivores, are more likely to interact with each other and compete than with members of other functional groups. Similarly, species exploiting their environment at the same range of scale, that is, species with body mass that place them in the same body mass aggregation, are more likely to interact with each other, and potentially compete, than with species that exploit their environment at larger or smaller scales. Thus, coexistence of species within the same functional group will be facilitated if they exploit their environment at different scales, and species operating at the same scale are likely to be member of different functional groups. Compartmentalization of species interactions by scale, driving within-scale diversity and cross-scale redundancy, is likely to be adaptive because it creates resilient and thus persistent species combinations, by maximizing response diversity within scales and by providing a robust check to perturbations that tend to scale up, such as insect outbreaks.

Because of the complex and unpredictable nature of ecosystems, the task of increasing, or even maintaining, ecological resilience is daunting. Estimating or predicting resilience is one of the challenges ecologists face in the management of ecosystems. Recent improvements in estimating ecological resilience have been made with the use of models, however, these methods are still relatively new and their utility has not been effectively tested (Peterson, 2002). Allen et al. (2005) propose that resilience may be operationalized in the discontinuous structure of complex systems. They suggest that numbers of body mass aggregations, richness of function within and across aggregations, and the location of species turnover are measures that can be used to determine the relative resilience of system. Our analysis shows that ecological systems exhibit a non-random distribution of function within and across aggregations. Documenting a non-random distribution of function across aggregations is
Our simulations determine if richness is spread evenly across body mass aggregations, but does not determine whether a particular functional group is spread across aggregations more than expected. The latter is assumed to follow the former; however we do not explicitly test this. Also, we have not accounted for phylogenetic constraints on body mass. Functional groups may be constrained to species of certain body masses. For example, we can predict a granivorous, foliage-gleaning bird to be of a relatively small body mass, or an aerial carnivore to be amongst the larger birds in a community. On the other hand, these constraints are not hard and fast. Baleen whales are especially large insectivores, feeding on tiny invertebrates. Likewise, fire ants (Solenopsis invicta) may feed upon animals much larger than themselves (Allen et al., 2004). Regardless, it is not necessary to have every functional group spread across every aggregation in order to support Peterson et al.'s (1998) hypothesis. Our tests confirm that functional groups are more dispersed than would be expected if they were randomly assembled.

As landscapes globally become increasingly altered by humans, animal communities also will change. Improving our knowledge of the relationship between landscape structure and animal body mass distributions may enhance our understanding of ecological resilience and the role biodiversity plays in maintaining resilience. Many current management strategies fail because they attempt to control disturbances or fluctuations, or manage for only one or a few species (Gunderson, 2000; Folke et al., 2004). These strategies do not account for the unpredictable nature of complex ecosystems. By maintaining or increasing resilience in these systems, the likelihood of transformations to undesired, alternative states of ecological processes and structure may be reduced. We must also adapt to the gradual, and often unexpected, changes that affect resilience using approaches that operate at multiple scales (Gunderson, 2000; Gunderson and Holling, 2002; Folke et al., 2004).

In order to develop more advanced methods of estimating resilience, it is important to understand how resilience is generated within ecosystems. Peterson et al. (1998) believed that resilience is generated, in part, in the discontinuous structure of these systems through functional diversity of species within scales and the redundancy of function across scales. Our study supports this proposition, and together with future empirical and field tests may help provide a thorough understanding of how ecological resilience is generated. By determining the body mass distributions and functional makeup of animal communities, we may be able to predict which species are at the highest risks and how to best maintain an ecosystem’s resilience. Using and improving these tools may be a key element to better management of ecological systems in the future.

Acknowledgements

Support was provided by the James S. McDonnell Foundation 21st Century Research Award/Studying Complex Systems (Allen). The Nebraska Cooperative Fish and Wildlife Research Unit is jointly supported by a cooperative agreement between the United States Geological Survey-Biological Resources Division, the Nebraska Game and Parks Commission, the University of Nebraska-Lincoln and the Wildlife Management Institute.

Appendix A

Bird species distribution for Mediterranean-climate: San Diego County, California, USA; Spain; southwestern Australia; South Africa (Tables A1–A4) and mammal species distribution for Mediterranean-climate: California, USA; South Africa; southwestern Australia; Chile; Spain (Tables A5–A9).

<table>
<thead>
<tr>
<th>Latin name</th>
<th>Body mass</th>
<th>Aggregation</th>
<th>Functional group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Archilochus costae</td>
<td>0.491</td>
<td>1</td>
<td>HeAe</td>
</tr>
<tr>
<td>Cynanthus latirostris</td>
<td>0.491</td>
<td>1</td>
<td>HeAe</td>
</tr>
<tr>
<td>Archilochus alexandri</td>
<td>0.531</td>
<td>1</td>
<td>HeAe</td>
</tr>
<tr>
<td>Archilochus anna</td>
<td>0.623</td>
<td>1</td>
<td>HeAe</td>
</tr>
<tr>
<td>Polioptila melanura</td>
<td>0.708</td>
<td>1</td>
<td>InFo</td>
</tr>
<tr>
<td>Psaltriparius minimus</td>
<td>0.724</td>
<td>1</td>
<td>InFo</td>
</tr>
<tr>
<td>Polioptila caerulea</td>
<td>0.778</td>
<td>1</td>
<td>InFo</td>
</tr>
<tr>
<td>Wilsonia pusilla</td>
<td>0.839</td>
<td>2</td>
<td>InFo</td>
</tr>
<tr>
<td>Dendroica nigrescens</td>
<td>0.922</td>
<td>2</td>
<td>InFo</td>
</tr>
<tr>
<td>Vireo bellii pusillus</td>
<td>0.929</td>
<td>2</td>
<td>InFo</td>
</tr>
<tr>
<td>Vermivora celata</td>
<td>0.954</td>
<td>2</td>
<td>InFo</td>
</tr>
<tr>
<td>Carduelis psaltria</td>
<td>0.978</td>
<td>2</td>
<td>InFo</td>
</tr>
<tr>
<td>Dendroica petechia</td>
<td>0.978</td>
<td>2</td>
<td>GrFo</td>
</tr>
<tr>
<td>Thryomanes bewickii</td>
<td>0.996</td>
<td>2</td>
<td>InTe</td>
</tr>
<tr>
<td>Empidonax difficilis</td>
<td>1.000</td>
<td>2</td>
<td>InAe</td>
</tr>
<tr>
<td>Geothlypis trichas</td>
<td>1.004</td>
<td>2</td>
<td>InFo</td>
</tr>
<tr>
<td>Parus gambelli baileyae</td>
<td>1.033</td>
<td>2</td>
<td>InFo</td>
</tr>
<tr>
<td>Troglodytes aedon</td>
<td>1.037</td>
<td>2</td>
<td>InTe</td>
</tr>
<tr>
<td>Latin name</td>
<td>Body mass</td>
<td>Aggregation</td>
<td>Functional group</td>
</tr>
<tr>
<td>----------------------------</td>
<td>-----------</td>
<td>-------------</td>
<td>------------------</td>
</tr>
<tr>
<td>Carduelis lawrencei</td>
<td>1.039</td>
<td>2</td>
<td>GrFo</td>
</tr>
<tr>
<td>Cistothorus palustris</td>
<td>1.051</td>
<td>2</td>
<td>InTe</td>
</tr>
<tr>
<td>Vireo huttoni huttoni</td>
<td>1.064</td>
<td>2</td>
<td>InFo</td>
</tr>
<tr>
<td>Spizella atripalialis</td>
<td>1.076</td>
<td>2</td>
<td>InTe</td>
</tr>
<tr>
<td>Spizella passerina</td>
<td>1.090</td>
<td>2</td>
<td>InTe</td>
</tr>
<tr>
<td>Sulphinctes mexicanus</td>
<td>1.100</td>
<td>2</td>
<td>InTe</td>
</tr>
<tr>
<td>Contopus sordidulus</td>
<td>1.107</td>
<td>2</td>
<td>InAe</td>
</tr>
<tr>
<td>Vireo vicinior</td>
<td>1.107</td>
<td>2</td>
<td>InFo</td>
</tr>
<tr>
<td>Carduelis tristis</td>
<td>1.111</td>
<td>2</td>
<td>GrFo</td>
</tr>
<tr>
<td>Empidonax traillii</td>
<td>1.127</td>
<td>2</td>
<td>InAe</td>
</tr>
<tr>
<td>Tachycineta thalassina</td>
<td>1.154</td>
<td>2</td>
<td>InAe</td>
</tr>
<tr>
<td>Chamaea fasciata</td>
<td>1.166</td>
<td>2</td>
<td>InFo</td>
</tr>
<tr>
<td>Vireo gilvus</td>
<td>1.170</td>
<td>2</td>
<td>InFo</td>
</tr>
<tr>
<td>Stelgidopteryx ruficollis</td>
<td>1.182</td>
<td>2</td>
<td>InAe</td>
</tr>
<tr>
<td>Passerina amoena</td>
<td>1.190</td>
<td>2</td>
<td>InTe</td>
</tr>
<tr>
<td>Vireo solitarius</td>
<td>1.220</td>
<td>3</td>
<td>InFo</td>
</tr>
<tr>
<td>Ammodramus savannarum</td>
<td>1.230</td>
<td>3</td>
<td>InTe</td>
</tr>
<tr>
<td>Parus inornatus</td>
<td>1.243</td>
<td>3</td>
<td>InAe</td>
</tr>
<tr>
<td>Sayornis nigricans</td>
<td>1.271</td>
<td>3</td>
<td>InAe</td>
</tr>
<tr>
<td>Aimophila ruficeps</td>
<td>1.272</td>
<td>3</td>
<td>InTe</td>
</tr>
<tr>
<td>Aimophila belli</td>
<td>1.286</td>
<td>3</td>
<td>InTe</td>
</tr>
<tr>
<td>Zonotrichia melodia</td>
<td>1.291</td>
<td>3</td>
<td>InTe</td>
</tr>
<tr>
<td>Sitta carolinensis</td>
<td>1.324</td>
<td>4</td>
<td>InAe</td>
</tr>
<tr>
<td>Sayornis saya</td>
<td>1.326</td>
<td>4</td>
<td>InAe</td>
</tr>
<tr>
<td>Carpodacus mexicanus</td>
<td>1.330</td>
<td>4</td>
<td>GrTe</td>
</tr>
<tr>
<td>Hirundo pyrrhonota</td>
<td>1.334</td>
<td>4</td>
<td>InAe</td>
</tr>
<tr>
<td>Phainopepla nitens</td>
<td>1.380</td>
<td>5</td>
<td>HeFo</td>
</tr>
<tr>
<td>Icterus caucalus</td>
<td>1.386</td>
<td>5</td>
<td>InFo</td>
</tr>
<tr>
<td>Carpodacus purpureus</td>
<td>1.396</td>
<td>5</td>
<td>GrTe</td>
</tr>
<tr>
<td>Icteria virens auricollis</td>
<td>1.403</td>
<td>5</td>
<td>InFo</td>
</tr>
<tr>
<td>Dendrocoptes pubescens</td>
<td>1.431</td>
<td>5</td>
<td>InBa</td>
</tr>
<tr>
<td>Myiarchus cinerascens</td>
<td>1.435</td>
<td>5</td>
<td>InAe</td>
</tr>
<tr>
<td>Sialia mexicana</td>
<td>1.448</td>
<td>5</td>
<td>InAe</td>
</tr>
<tr>
<td>Passerina caerulea</td>
<td>1.453</td>
<td>5</td>
<td>InTe</td>
</tr>
<tr>
<td>Chondestes grammacus</td>
<td>1.462</td>
<td>5</td>
<td>GrTe</td>
</tr>
<tr>
<td>Pipilo chlorurus</td>
<td>1.468</td>
<td>5</td>
<td>InTe</td>
</tr>
<tr>
<td>Catharus ustulatus</td>
<td>1.489</td>
<td>5</td>
<td>InFo</td>
</tr>
<tr>
<td>Eremophila alpestris</td>
<td>1.496</td>
<td>5</td>
<td>GrTe</td>
</tr>
<tr>
<td>Aegronautes saxatalis</td>
<td>1.507</td>
<td>5</td>
<td>InAe</td>
</tr>
<tr>
<td>Passerella iliaca</td>
<td>1.509</td>
<td>5</td>
<td>InTe</td>
</tr>
<tr>
<td>Icterus galbula parvus</td>
<td>1.526</td>
<td>5</td>
<td>InFo</td>
</tr>
<tr>
<td>Dendrocoptes nutalli</td>
<td>1.583</td>
<td>6</td>
<td>InBa</td>
</tr>
<tr>
<td>Campylorhynchus brunneicapillus</td>
<td>1.590</td>
<td>6</td>
<td>InTe</td>
</tr>
<tr>
<td>Tyrannus verticalis</td>
<td>1.598</td>
<td>6</td>
<td>InAe</td>
</tr>
<tr>
<td>Pipilo erythrophthalmus</td>
<td>1.610</td>
<td>6</td>
<td>InTe</td>
</tr>
<tr>
<td>Pheucticus melanocephalus</td>
<td>1.623</td>
<td>6</td>
<td>InFo</td>
</tr>
<tr>
<td>Molothrus ater</td>
<td>1.642</td>
<td>6</td>
<td>InTe</td>
</tr>
<tr>
<td>Pipilo fascius semicola</td>
<td>1.647</td>
<td>6</td>
<td>GrTe</td>
</tr>
<tr>
<td>Tyrannus vociferans</td>
<td>1.659</td>
<td>6</td>
<td>InAe</td>
</tr>
<tr>
<td>Lanius ludovicianus</td>
<td>1.676</td>
<td>6</td>
<td>InAe</td>
</tr>
<tr>
<td>Mimus polyglottos</td>
<td>1.686</td>
<td>6</td>
<td>InTe</td>
</tr>
<tr>
<td>Progne subis subis</td>
<td>1.694</td>
<td>6</td>
<td>InAe</td>
</tr>
<tr>
<td>Chordeiles acutipennis</td>
<td>1.698</td>
<td>6</td>
<td>InAe</td>
</tr>
<tr>
<td>Phaenoptilus nutalli</td>
<td>1.713</td>
<td>6</td>
<td>InAe</td>
</tr>
<tr>
<td>Agelaius phoeniceus</td>
<td>1.721</td>
<td>6</td>
<td>InTe</td>
</tr>
<tr>
<td>Agelaius tricolor</td>
<td>1.769</td>
<td>7</td>
<td>InTe</td>
</tr>
<tr>
<td>Euphagus cyanoccephalus</td>
<td>1.797</td>
<td>7</td>
<td>InTe</td>
</tr>
<tr>
<td>Coccylus americanus</td>
<td>1.806</td>
<td>7</td>
<td>InFo</td>
</tr>
<tr>
<td>Xanthocephalus xanthocephalus</td>
<td>1.810</td>
<td>7</td>
<td>InTe</td>
</tr>
<tr>
<td>Perzona carolina</td>
<td>1.873</td>
<td>8</td>
<td>GrTe</td>
</tr>
<tr>
<td>Aphelocoma coerulescens</td>
<td>1.904</td>
<td>8</td>
<td>OmTe</td>
</tr>
<tr>
<td>Melanerpes formicivorus</td>
<td>1.906</td>
<td>8</td>
<td>OmBa</td>
</tr>
<tr>
<td>Rallus limicola limicola</td>
<td>1.914</td>
<td>8</td>
<td>InAq</td>
</tr>
<tr>
<td>Toxostoma redivivum</td>
<td>1.926</td>
<td>8</td>
<td>InTe</td>
</tr>
<tr>
<td>Icteryx exilis hesperis</td>
<td>1.936</td>
<td>8</td>
<td>CaAq</td>
</tr>
<tr>
<td>Charadrius vociferus</td>
<td>1.985</td>
<td>9</td>
<td>InTe</td>
</tr>
</tbody>
</table>
Each distribution includes Latin names, log10-transformed body masses, body mass aggregation membership, and functional group code used in richness simulations. The first two letters (prefix) of the functional group code represent the diet component and the latter two letters (suffix) represent foraging strata. Key to prefixes: Ca = carnivore; Gr = granivore; He = herbivore; In = insectivore; Ne = nectarivore; Om = omnivore. Key to suffixes: Ae = aerial; Aq = aquatic; Ar = arboreal; Ba = bark; Fo = foliage; Fs = fossorial; Te = terrestrial.

### Table A1 (Continued)

<table>
<thead>
<tr>
<th>Latin name</th>
<th>Body mass</th>
<th>Aggregation</th>
<th>Functional group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sturnella neglecta</td>
<td>2.003</td>
<td>9</td>
<td>InTe</td>
</tr>
<tr>
<td>Falco sparverius</td>
<td>2.063</td>
<td>9</td>
<td>InAe</td>
</tr>
<tr>
<td>Zenaida macroura</td>
<td>2.076</td>
<td>9</td>
<td>GrTe</td>
</tr>
<tr>
<td>Colaptes auratus</td>
<td>2.102</td>
<td>9</td>
<td>InTe</td>
</tr>
<tr>
<td>Cyanocitta stelleri</td>
<td>2.107</td>
<td>9</td>
<td>OmTe</td>
</tr>
<tr>
<td>Otus kennicotti</td>
<td>2.155</td>
<td>9</td>
<td>CaAe</td>
</tr>
<tr>
<td>Athene cunicularia</td>
<td>2.190</td>
<td>9</td>
<td>InAe</td>
</tr>
<tr>
<td>Calipepla gambeli</td>
<td>2.220</td>
<td>9</td>
<td>GrTe</td>
</tr>
<tr>
<td>Calipepla californica</td>
<td>2.238</td>
<td>9</td>
<td>GrTe</td>
</tr>
<tr>
<td>Andeola striata anthonyi</td>
<td>2.326</td>
<td>10</td>
<td>CaAq</td>
</tr>
<tr>
<td>Calipepla pica</td>
<td>2.367</td>
<td>10</td>
<td>GrTe</td>
</tr>
<tr>
<td>Asio otus ulsionianus</td>
<td>2.418</td>
<td>10</td>
<td>CaAe</td>
</tr>
<tr>
<td>Elanus leucurus</td>
<td>2.522</td>
<td>11</td>
<td>CaAe</td>
</tr>
<tr>
<td>Egretta ibis ibis</td>
<td>2.529</td>
<td>11</td>
<td>InTe</td>
</tr>
<tr>
<td>Geoccyx californianus</td>
<td>2.575</td>
<td>11</td>
<td>InTe</td>
</tr>
<tr>
<td>Columba fasciata</td>
<td>2.593</td>
<td>11</td>
<td>HeFo</td>
</tr>
<tr>
<td>Circus cyanus hudsonius</td>
<td>2.639</td>
<td>11</td>
<td>CaAe</td>
</tr>
<tr>
<td>Accipiter cooperii</td>
<td>2.642</td>
<td>11</td>
<td>CaAe</td>
</tr>
<tr>
<td>Corvus brachyrhynchos</td>
<td>2.651</td>
<td>11</td>
<td>OmTe</td>
</tr>
<tr>
<td>Tyto alba pratincola</td>
<td>2.719</td>
<td>11</td>
<td>CaAe</td>
</tr>
<tr>
<td>Buteo lineatus</td>
<td>2.747</td>
<td>11</td>
<td>CaAe</td>
</tr>
<tr>
<td>Strix occidentalis</td>
<td>2.785</td>
<td>11</td>
<td>CaAe</td>
</tr>
<tr>
<td>Falco mexicanus</td>
<td>2.850</td>
<td>11</td>
<td>CaAe</td>
</tr>
<tr>
<td>Dendrocynna bicolor</td>
<td>2.851</td>
<td>11</td>
<td>HeAq</td>
</tr>
<tr>
<td>Falco peregrinus</td>
<td>2.893</td>
<td>11</td>
<td>CaAe</td>
</tr>
<tr>
<td>Nycticorax ncticorax</td>
<td>2.946</td>
<td>11</td>
<td>CaAq</td>
</tr>
<tr>
<td>Buteo butalis</td>
<td>2.995</td>
<td>11</td>
<td>CaAe</td>
</tr>
<tr>
<td>Buteo jamaicensis</td>
<td>3.052</td>
<td>11</td>
<td>CaAe</td>
</tr>
<tr>
<td>Corvus corax claronensis</td>
<td>3.079</td>
<td>11</td>
<td>OmTe</td>
</tr>
<tr>
<td>Bubo virginianus</td>
<td>3.117</td>
<td>11</td>
<td>CaAe</td>
</tr>
<tr>
<td>Cathartes aura</td>
<td>3.166</td>
<td>11</td>
<td>CaAe</td>
</tr>
<tr>
<td>Aquila chrysaetos</td>
<td>3.623</td>
<td>12</td>
<td>CaAe</td>
</tr>
<tr>
<td>Gymnogyps californicus</td>
<td>4.004</td>
<td>12</td>
<td>CaAe</td>
</tr>
</tbody>
</table>

### Table A2 – Bird species distribution for Mediterranean-climate Spain

<table>
<thead>
<tr>
<th>Latin name</th>
<th>Body mass</th>
<th>Aggregation</th>
<th>Functional group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aegithalos caudatus</td>
<td>0.895</td>
<td>1</td>
<td>InFo</td>
</tr>
<tr>
<td>Phylloscopus borelli</td>
<td>0.913</td>
<td>1</td>
<td>InFo</td>
</tr>
<tr>
<td>Certhia brachyaclyta</td>
<td>0.914</td>
<td>1</td>
<td>InBa</td>
</tr>
<tr>
<td>Cisticola juncidis</td>
<td>0.940</td>
<td>1</td>
<td>InTe</td>
</tr>
<tr>
<td>Sylvia cantillans</td>
<td>0.964</td>
<td>1</td>
<td>InFo</td>
</tr>
<tr>
<td>Troglodytes troglodytes</td>
<td>0.973</td>
<td>1</td>
<td>InFo</td>
</tr>
<tr>
<td>Sylvia undata</td>
<td>0.973</td>
<td>1</td>
<td>InTe</td>
</tr>
<tr>
<td>Parus ater</td>
<td>0.987</td>
<td>1</td>
<td>InFo</td>
</tr>
<tr>
<td>Sylvia conspicillata</td>
<td>1.004</td>
<td>1</td>
<td>InFo</td>
</tr>
<tr>
<td>Parus caeruleus</td>
<td>1.029</td>
<td>1</td>
<td>InFo</td>
</tr>
<tr>
<td>Hippolais pallida</td>
<td>1.039</td>
<td>1</td>
<td>InFo</td>
</tr>
<tr>
<td>Hippolais polyglotta</td>
<td>1.041</td>
<td>1</td>
<td>InFo</td>
</tr>
<tr>
<td>Seranus serinus</td>
<td>1.077</td>
<td>1</td>
<td>GrTe</td>
</tr>
<tr>
<td>Parus cristatus</td>
<td>1.099</td>
<td>1</td>
<td>InFo</td>
</tr>
<tr>
<td>Riparia riparia</td>
<td>1.119</td>
<td>1</td>
<td>InAe</td>
</tr>
<tr>
<td>Cetia cetia</td>
<td>1.125</td>
<td>1</td>
<td>InTe</td>
</tr>
<tr>
<td>Sylvia melanocephala</td>
<td>1.129</td>
<td>1</td>
<td>InTe</td>
</tr>
<tr>
<td>Saxicola torquata</td>
<td>1.161</td>
<td>1</td>
<td>InAe</td>
</tr>
<tr>
<td>Maccucastra striata</td>
<td>1.197</td>
<td>2</td>
<td>InAe</td>
</tr>
<tr>
<td>Carduelis carduelis</td>
<td>1.210</td>
<td>2</td>
<td>GrTe</td>
</tr>
<tr>
<td>Phoenicurus ochrurus</td>
<td>1.211</td>
<td>2</td>
<td>InTe</td>
</tr>
<tr>
<td>Latin name</td>
<td>Body mass</td>
<td>Aggregation</td>
<td>Functional group</td>
</tr>
<tr>
<td>-------------------------</td>
<td>-----------</td>
<td>-------------</td>
<td>------------------</td>
</tr>
<tr>
<td>Oenanthe hispanica</td>
<td>1.217</td>
<td>2</td>
<td>InTe</td>
</tr>
<tr>
<td>Erithacus rubecula</td>
<td>1.223</td>
<td>2</td>
<td>InTe</td>
</tr>
<tr>
<td>Motacilla cinerea</td>
<td>1.261</td>
<td>3</td>
<td>InTe</td>
</tr>
<tr>
<td>Motacilla flava</td>
<td>1.268</td>
<td>3</td>
<td>InTe</td>
</tr>
<tr>
<td>Parus major</td>
<td>1.272</td>
<td>3</td>
<td>InTe</td>
</tr>
<tr>
<td>Hirundo rustica</td>
<td>1.281</td>
<td>3</td>
<td>InTe</td>
</tr>
<tr>
<td>Carduelis cannabina</td>
<td>1.290</td>
<td>3</td>
<td>InTe</td>
</tr>
<tr>
<td>Delichon urbica</td>
<td>1.291</td>
<td>3</td>
<td>GrTe</td>
</tr>
<tr>
<td>Sylvia atricapilla</td>
<td>1.291</td>
<td>3</td>
<td>InFo</td>
</tr>
<tr>
<td>Luscinia megarhynchos</td>
<td>1.312</td>
<td>3</td>
<td>InTe</td>
</tr>
<tr>
<td>Motacilla alba</td>
<td>1.322</td>
<td>3</td>
<td>InTe</td>
</tr>
<tr>
<td>Sylvia hortensis</td>
<td>1.324</td>
<td>3</td>
<td>InFo</td>
</tr>
<tr>
<td>Emberiza coelebs</td>
<td>1.331</td>
<td>3</td>
<td>GrTe</td>
</tr>
<tr>
<td>Calandrella brachyactyla</td>
<td>1.347</td>
<td>3</td>
<td>InTe</td>
</tr>
<tr>
<td>Hirundo daurica</td>
<td>1.347</td>
<td>3</td>
<td>InTe</td>
</tr>
<tr>
<td>Pyemodina rupestris</td>
<td>1.364</td>
<td>3</td>
<td>InTe</td>
</tr>
<tr>
<td>Emberiza cia</td>
<td>1.366</td>
<td>3</td>
<td>GrTe</td>
</tr>
<tr>
<td>Calandrella rufescens</td>
<td>1.377</td>
<td>3</td>
<td>InTe</td>
</tr>
<tr>
<td>Cercotrichas galactotes</td>
<td>1.387</td>
<td>3</td>
<td>InTe</td>
</tr>
<tr>
<td>Oenanthe oenanthe</td>
<td>1.389</td>
<td>3</td>
<td>InTe</td>
</tr>
<tr>
<td>Emberiza cirrus</td>
<td>1.408</td>
<td>3</td>
<td>InTe</td>
</tr>
<tr>
<td>Lullula arborea</td>
<td>1.417</td>
<td>3</td>
<td>InTe</td>
</tr>
<tr>
<td>Carduelis chloris</td>
<td>1.418</td>
<td>3</td>
<td>InTe</td>
</tr>
<tr>
<td>Antipius campestris</td>
<td>1.459</td>
<td>4</td>
<td>InTe</td>
</tr>
<tr>
<td>Passer domesticus</td>
<td>1.478</td>
<td>4</td>
<td>GrTe</td>
</tr>
<tr>
<td>Acrocephalus arundinaceus</td>
<td>1.479</td>
<td>4</td>
<td>InFo</td>
</tr>
<tr>
<td>Lanius senator</td>
<td>1.512</td>
<td>4</td>
<td>InAe</td>
</tr>
<tr>
<td>Alcedo atthis</td>
<td>1.550</td>
<td>5</td>
<td>CaAe</td>
</tr>
<tr>
<td>Galerida theklae</td>
<td>1.566</td>
<td>5</td>
<td>InTe</td>
</tr>
<tr>
<td>Alauda arvensis</td>
<td>1.585</td>
<td>5</td>
<td>InTe</td>
</tr>
<tr>
<td>Oenanthe leucura</td>
<td>1.600</td>
<td>5</td>
<td>InTe</td>
</tr>
<tr>
<td>Apus apus</td>
<td>1.630</td>
<td>5</td>
<td>InAe</td>
</tr>
<tr>
<td>Galerida cristata</td>
<td>1.650</td>
<td>5</td>
<td>GrTe</td>
</tr>
<tr>
<td>Melocaria calandra</td>
<td>1.694</td>
<td>6</td>
<td>InTe</td>
</tr>
<tr>
<td>Merops apiaster</td>
<td>1.741</td>
<td>6</td>
<td>InTe</td>
</tr>
<tr>
<td>Monticola solitarius</td>
<td>1.756</td>
<td>6</td>
<td>InTe</td>
</tr>
<tr>
<td>Coccothraustes coccothraustes</td>
<td>1.763</td>
<td>6</td>
<td>GrFo</td>
</tr>
<tr>
<td>Cinclus cinctus</td>
<td>1.778</td>
<td>6</td>
<td>InAq</td>
</tr>
<tr>
<td>Melanocephala calandra</td>
<td>1.783</td>
<td>6</td>
<td>InTe</td>
</tr>
<tr>
<td>Lanius excubitor</td>
<td>1.802</td>
<td>6</td>
<td>InAe</td>
</tr>
<tr>
<td>Turnix sylvarica</td>
<td>1.813</td>
<td>6</td>
<td>GrTe</td>
</tr>
<tr>
<td>Upupa epops</td>
<td>1.830</td>
<td>6</td>
<td>InTe</td>
</tr>
<tr>
<td>Caprimulgus ruficollis</td>
<td>1.836</td>
<td>6</td>
<td>InTe</td>
</tr>
<tr>
<td>Oriolus oriolus</td>
<td>1.847</td>
<td>6</td>
<td>InFo</td>
</tr>
<tr>
<td>Glareola pratincola</td>
<td>1.904</td>
<td>7</td>
<td>InTe</td>
</tr>
<tr>
<td>Dendrocopos major</td>
<td>1.906</td>
<td>7</td>
<td>InAe</td>
</tr>
<tr>
<td>Caprimulgus europaeus</td>
<td>1.929</td>
<td>7</td>
<td>InTe</td>
</tr>
<tr>
<td>Otus scops</td>
<td>1.930</td>
<td>7</td>
<td>InAe</td>
</tr>
<tr>
<td>Sturnus unicolor</td>
<td>1.938</td>
<td>7</td>
<td>InTe</td>
</tr>
<tr>
<td>Turdus merula</td>
<td>1.967</td>
<td>7</td>
<td>InTe</td>
</tr>
<tr>
<td>Coturnix coturnix</td>
<td>2.007</td>
<td>7</td>
<td>GrTe</td>
</tr>
<tr>
<td>Apus (Tachymarptis) melba</td>
<td>2.017</td>
<td>7</td>
<td>InAe</td>
</tr>
<tr>
<td>Rallus aquaticus</td>
<td>2.063</td>
<td>8</td>
<td>InAq</td>
</tr>
<tr>
<td>Cuculus canorus</td>
<td>2.065</td>
<td>8</td>
<td>InFo</td>
</tr>
<tr>
<td>Turdus viscivorus</td>
<td>2.071</td>
<td>8</td>
<td>InTe</td>
</tr>
<tr>
<td>Tachybaptus ruficollis</td>
<td>2.130</td>
<td>9</td>
<td>InAq</td>
</tr>
<tr>
<td>Stegrepetia turtur</td>
<td>2.135</td>
<td>9</td>
<td>GrTe</td>
</tr>
<tr>
<td>Coracias garrulus</td>
<td>2.167</td>
<td>9</td>
<td>InAe</td>
</tr>
<tr>
<td>Isobrychus minutus</td>
<td>2.169</td>
<td>9</td>
<td>CaAq</td>
</tr>
<tr>
<td>Falco naumanni</td>
<td>2.182</td>
<td>9</td>
<td>InAe</td>
</tr>
<tr>
<td>Clamator glandarius</td>
<td>2.186</td>
<td>9</td>
<td>InFo</td>
</tr>
<tr>
<td>Athene noctua</td>
<td>2.196</td>
<td>9</td>
<td>CaAe</td>
</tr>
<tr>
<td>Gargarus glandarius</td>
<td>2.214</td>
<td>9</td>
<td>InFo</td>
</tr>
<tr>
<td>Picus viridis</td>
<td>2.244</td>
<td>9</td>
<td>InTe</td>
</tr>
<tr>
<td>Accipiter nisus</td>
<td>2.310</td>
<td>10</td>
<td>CaAe</td>
</tr>
<tr>
<td>Falco subbuteo</td>
<td>2.524</td>
<td>10</td>
<td>CaAe</td>
</tr>
</tbody>
</table>
Table A2 (Continued)

<table>
<thead>
<tr>
<th>Latin name</th>
<th>Body mass</th>
<th>Aggregation</th>
<th>Functional group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Falco tinnunculus</td>
<td>2.366</td>
<td>10</td>
<td>CaAe</td>
</tr>
<tr>
<td>Corvus monedula</td>
<td>2.376</td>
<td>10</td>
<td>InTe</td>
</tr>
<tr>
<td>Pterocles alchata</td>
<td>2.376</td>
<td>10</td>
<td>GrTe</td>
</tr>
<tr>
<td>Asio Otus</td>
<td>2.423</td>
<td>10</td>
<td>CaAe</td>
</tr>
<tr>
<td>Tyto alba</td>
<td>2.454</td>
<td>10</td>
<td>CaAe</td>
</tr>
<tr>
<td>Columba livia</td>
<td>2.469</td>
<td>10</td>
<td>GrTe</td>
</tr>
<tr>
<td>Gallinula chloropus</td>
<td>2.477</td>
<td>10</td>
<td>HeAq</td>
</tr>
<tr>
<td>Circus pygargus</td>
<td>2.499</td>
<td>10</td>
<td>CaAe</td>
</tr>
<tr>
<td>Pterocles orientalis</td>
<td>2.608</td>
<td>11</td>
<td>CaAe</td>
</tr>
<tr>
<td>Strix aluco</td>
<td>2.663</td>
<td>11</td>
<td>InAq</td>
</tr>
<tr>
<td>Burhinus indicus</td>
<td>2.665</td>
<td>11</td>
<td>GrTe</td>
</tr>
<tr>
<td>Alectoris rufa</td>
<td>2.679</td>
<td>11</td>
<td>GrTe</td>
</tr>
<tr>
<td>Columba palumbus</td>
<td>2.689</td>
<td>11</td>
<td>HeTe</td>
</tr>
<tr>
<td>Corvus corone</td>
<td>2.691</td>
<td>11</td>
<td>InTe</td>
</tr>
<tr>
<td>Podiceps cristatus</td>
<td>2.889</td>
<td>12</td>
<td>CaAq</td>
</tr>
<tr>
<td>Milvus migrans</td>
<td>2.918</td>
<td>12</td>
<td>CaAe</td>
</tr>
<tr>
<td>Hieraaetus pennatus</td>
<td>2.925</td>
<td>12</td>
<td>CaAe</td>
</tr>
<tr>
<td>Buteo buteo</td>
<td>2.929</td>
<td>12</td>
<td>CaAe</td>
</tr>
<tr>
<td>Ardea purpurea</td>
<td>2.941</td>
<td>12</td>
<td>CaAq</td>
</tr>
<tr>
<td>Falco peregrinus</td>
<td>2.949</td>
<td>12</td>
<td>CaAe</td>
</tr>
<tr>
<td>Accipiter gentilis</td>
<td>2.967</td>
<td>12</td>
<td>CaAe</td>
</tr>
<tr>
<td>Milvus milvus</td>
<td>3.020</td>
<td>12</td>
<td>CaAe</td>
</tr>
<tr>
<td>Corvus corax</td>
<td>3.054</td>
<td>12</td>
<td>CaTe</td>
</tr>
<tr>
<td>Circus gallicus</td>
<td>3.230</td>
<td>13</td>
<td>CaAe</td>
</tr>
<tr>
<td>Hieraaetus fasciatus</td>
<td>3.312</td>
<td>13</td>
<td>CaAe</td>
</tr>
<tr>
<td>Neophron percnopterus</td>
<td>3.320</td>
<td>13</td>
<td>CaAe</td>
</tr>
<tr>
<td>Bubo bubo</td>
<td>3.347</td>
<td>13</td>
<td>CaAe</td>
</tr>
<tr>
<td>Aquila heliaca</td>
<td>3.514</td>
<td>14</td>
<td>CaAe</td>
</tr>
<tr>
<td>Ciconia ciconia</td>
<td>3.538</td>
<td>14</td>
<td>CaTe</td>
</tr>
<tr>
<td>Aquila chrysaetos</td>
<td>3.642</td>
<td>14</td>
<td>CaAe</td>
</tr>
<tr>
<td>Otis tarda</td>
<td>3.862</td>
<td>14</td>
<td>InTe</td>
</tr>
<tr>
<td>Gyps fulvus</td>
<td>3.870</td>
<td>14</td>
<td>CaAe</td>
</tr>
</tbody>
</table>

Each distribution includes Latin names, log10-transformed body masses, body mass aggregation membership, and functional group code used in richness simulations. The first two letters (prefix) of the functional group code represent the diet component and the latter two letters (suffix) represent foraging strata. **Key to prefixes:** Ca = carnivore; Gr = granivore; He = herbivore; In = insectivore; Ne = nectarivore; Om = omnivore. **Key to suffixes:** Ae = aerial; Aq = aquatic; Ar = arboreal; Ba = bark; Fo = foliage; Fs = fossorial; Te = terrestrial.

Table A3 – Bird species distribution for Mediterranean-climate southwestern Australia

<table>
<thead>
<tr>
<th>Latin name</th>
<th>Body mass</th>
<th>Aggregation</th>
<th>Functional group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Smicrornis brevirostris</td>
<td>0.708</td>
<td>1</td>
<td>GrFo</td>
</tr>
<tr>
<td>Gerygone fusca</td>
<td>0.783</td>
<td>1</td>
<td>InFo</td>
</tr>
<tr>
<td>Malurus leucoterus</td>
<td>0.785</td>
<td>1</td>
<td>InFo</td>
</tr>
<tr>
<td>Acanthiza inornata</td>
<td>0.845</td>
<td>2</td>
<td>InTe</td>
</tr>
<tr>
<td>Poephila guttata</td>
<td>0.845</td>
<td>2</td>
<td>GrTe</td>
</tr>
<tr>
<td>Acanthiza uropygialis</td>
<td>0.874</td>
<td>2</td>
<td>InFo</td>
</tr>
<tr>
<td>Strigitus malachurus</td>
<td>0.879</td>
<td>2</td>
<td>InTe</td>
</tr>
<tr>
<td>Acanthiza apicalis</td>
<td>0.881</td>
<td>2</td>
<td>InFo</td>
</tr>
<tr>
<td>Certhionyx niger</td>
<td>0.892</td>
<td>2</td>
<td>NeFo</td>
</tr>
<tr>
<td>Petroica goodeni</td>
<td>0.903</td>
<td>2</td>
<td>InAe</td>
</tr>
<tr>
<td>Rhapidura fuliginosa</td>
<td>0.903</td>
<td>2</td>
<td>InAe</td>
</tr>
<tr>
<td>Malurus lamberti</td>
<td>0.903</td>
<td>2</td>
<td>InFo</td>
</tr>
<tr>
<td>Dicaeum hirundinaceum</td>
<td>0.903</td>
<td>2</td>
<td>HeTe</td>
</tr>
<tr>
<td>Acanthiza chrysorrhoa</td>
<td>0.944</td>
<td>3</td>
<td>InFo</td>
</tr>
<tr>
<td>Pardalotus punctatus</td>
<td>0.964</td>
<td>3</td>
<td>InFo</td>
</tr>
<tr>
<td>Malurus pulcherrimus</td>
<td>0.978</td>
<td>3</td>
<td>InFo</td>
</tr>
<tr>
<td>Petroica multicolor</td>
<td>0.982</td>
<td>3</td>
<td>InTe</td>
</tr>
<tr>
<td>Malurus splendens</td>
<td>1.000</td>
<td>3</td>
<td>InFo</td>
</tr>
<tr>
<td>Malurus elegans</td>
<td>1.000</td>
<td>3</td>
<td>InTe</td>
</tr>
<tr>
<td>Epitonius tricolor</td>
<td>1.024</td>
<td>3</td>
<td>NeFo</td>
</tr>
<tr>
<td>Acanthorhynchus superciliosus</td>
<td>1.033</td>
<td>3</td>
<td>NeFo</td>
</tr>
<tr>
<td>Latin name</td>
<td>Body mass</td>
<td>Aggregation</td>
<td>Functional group</td>
</tr>
<tr>
<td>------------------------</td>
<td>-----------</td>
<td>-------------</td>
<td>------------------</td>
</tr>
<tr>
<td>Sericornis brunneus</td>
<td>1.052</td>
<td>3</td>
<td>InTe</td>
</tr>
<tr>
<td>Cecropis ariel</td>
<td>1.053</td>
<td>3</td>
<td>InAe</td>
</tr>
<tr>
<td>Emblem oculata</td>
<td>1.070</td>
<td>3</td>
<td>GrFo</td>
</tr>
<tr>
<td>Daphnoesitla chrysoptera</td>
<td>1.076</td>
<td>3</td>
<td>InBa</td>
</tr>
<tr>
<td>Ephthianura albfons</td>
<td>1.079</td>
<td>3</td>
<td>InTe</td>
</tr>
<tr>
<td>Pardalotes striatus</td>
<td>1.086</td>
<td>3</td>
<td>InFo</td>
</tr>
<tr>
<td>Aphelocapha leucopsis</td>
<td>1.101</td>
<td>3</td>
<td>InTe</td>
</tr>
<tr>
<td>Sericornis frontal</td>
<td>1.107</td>
<td>3</td>
<td>InTe</td>
</tr>
<tr>
<td>Lichmera indistincta</td>
<td>1.114</td>
<td>3</td>
<td>NeFo</td>
</tr>
<tr>
<td>Sericornis cautus</td>
<td>1.153</td>
<td>4</td>
<td>InTe</td>
</tr>
<tr>
<td>Melithreptus breviostris</td>
<td>1.164</td>
<td>4</td>
<td>NeFo</td>
</tr>
<tr>
<td>Hirundo neoxena</td>
<td>1.167</td>
<td>4</td>
<td>InAe</td>
</tr>
<tr>
<td>Melithreptus lunatus</td>
<td>1.167</td>
<td>4</td>
<td>NeFo</td>
</tr>
<tr>
<td>Cheraoeca leucosternum</td>
<td>1.170</td>
<td>4</td>
<td>InAe</td>
</tr>
<tr>
<td>Cecropis nigricans</td>
<td>1.175</td>
<td>4</td>
<td>InAe</td>
</tr>
<tr>
<td>Microeca leucopaeba</td>
<td>1.196</td>
<td>4</td>
<td>InAe</td>
</tr>
<tr>
<td>Lichenostomus ornatus</td>
<td>1.250</td>
<td>5</td>
<td>NeFo</td>
</tr>
<tr>
<td>Phylidonyris albfons</td>
<td>1.255</td>
<td>5</td>
<td>NeFo</td>
</tr>
<tr>
<td>Pachycephala ruvensris</td>
<td>1.258</td>
<td>5</td>
<td>InTe</td>
</tr>
<tr>
<td>Phylidonyris nigra</td>
<td>1.262</td>
<td>5</td>
<td>NeFo</td>
</tr>
<tr>
<td>Phylidonyris melanoops</td>
<td>1.267</td>
<td>5</td>
<td>NeFo</td>
</tr>
<tr>
<td>Lichenostomus cracticus</td>
<td>1.292</td>
<td>5</td>
<td>InFo</td>
</tr>
<tr>
<td>Lichenostomus penicilatus</td>
<td>1.297</td>
<td>5</td>
<td>HeFo</td>
</tr>
<tr>
<td>Phylidonyris nooseholandiae</td>
<td>1.301</td>
<td>5</td>
<td>NeFo</td>
</tr>
<tr>
<td>Sericornis fuliginous</td>
<td>1.319</td>
<td>5</td>
<td>InFo</td>
</tr>
<tr>
<td>Melanodryas caculata</td>
<td>1.326</td>
<td>5</td>
<td>InTe</td>
</tr>
<tr>
<td>Espseltria griseogularis</td>
<td>1.336</td>
<td>5</td>
<td>InTe</td>
</tr>
<tr>
<td>Amytornis textilis</td>
<td>1.356</td>
<td>5</td>
<td>GrTe</td>
</tr>
<tr>
<td>Chrysoococyx basalis</td>
<td>1.358</td>
<td>5</td>
<td>InFo</td>
</tr>
<tr>
<td>Lichenostomus leucotiis</td>
<td>1.364</td>
<td>5</td>
<td>HeFo</td>
</tr>
<tr>
<td>Myiagra inquieta</td>
<td>1.380</td>
<td>5</td>
<td>InTe</td>
</tr>
<tr>
<td>Anthus novaeselandiae</td>
<td>1.384</td>
<td>5</td>
<td>InTe</td>
</tr>
<tr>
<td>Lichenostomus uirescens</td>
<td>1.391</td>
<td>5</td>
<td>NeFo</td>
</tr>
<tr>
<td>Chrysoococyx lucidus</td>
<td>1.394</td>
<td>5</td>
<td>InFo</td>
</tr>
<tr>
<td>Cinclorhamphus matheusi</td>
<td>1.398</td>
<td>5</td>
<td>GrTe</td>
</tr>
<tr>
<td>Cethionyx variegatus</td>
<td>1.414</td>
<td>5</td>
<td>NeFo</td>
</tr>
<tr>
<td>Lalage sueiri</td>
<td>1.415</td>
<td>5</td>
<td>InTe</td>
</tr>
<tr>
<td>Rhipidura leucophrys</td>
<td>1.442</td>
<td>5</td>
<td>InAe</td>
</tr>
<tr>
<td>Cinclorhamphus cruralis</td>
<td>1.447</td>
<td>5</td>
<td>InTe</td>
</tr>
<tr>
<td>Pulkunculus frontatus</td>
<td>1.456</td>
<td>5</td>
<td>InBa</td>
</tr>
<tr>
<td>Chrysoococyx occlusans</td>
<td>1.458</td>
<td>5</td>
<td>InFo</td>
</tr>
<tr>
<td>Merops ornatus</td>
<td>1.459</td>
<td>5</td>
<td>InAe</td>
</tr>
<tr>
<td>Meopsttacus undulatus</td>
<td>1.462</td>
<td>5</td>
<td>GrTe</td>
</tr>
<tr>
<td>Pachycephala morina</td>
<td>1.515</td>
<td>6</td>
<td>InTe</td>
</tr>
<tr>
<td>Pachycephala pectoralis</td>
<td>1.515</td>
<td>6</td>
<td>InTe</td>
</tr>
<tr>
<td>Climacteris rufa</td>
<td>1.526</td>
<td>6</td>
<td>InBa</td>
</tr>
<tr>
<td>Pomatostomus supercilliosus</td>
<td>1.544</td>
<td>6</td>
<td>InTe</td>
</tr>
<tr>
<td>Artamus cinereus</td>
<td>1.544</td>
<td>6</td>
<td>InAe</td>
</tr>
<tr>
<td>Artamus personatus</td>
<td>1.549</td>
<td>6</td>
<td>InAe</td>
</tr>
<tr>
<td>Geopelia cuneata</td>
<td>1.550</td>
<td>6</td>
<td>GrTe</td>
</tr>
<tr>
<td>Drymodes brunneopygia</td>
<td>1.568</td>
<td>6</td>
<td>InTe</td>
</tr>
<tr>
<td>Artamus cyanopterus</td>
<td>1.602</td>
<td>7</td>
<td>InAe</td>
</tr>
<tr>
<td>Turnix velox</td>
<td>1.613</td>
<td>7</td>
<td>GrTe</td>
</tr>
<tr>
<td>Halcyon sancta</td>
<td>1.620</td>
<td>7</td>
<td>InTe</td>
</tr>
<tr>
<td>Neophema elegans</td>
<td>1.633</td>
<td>7</td>
<td>GrTe</td>
</tr>
<tr>
<td>Glossopsitta porphyrocephala</td>
<td>1.641</td>
<td>7</td>
<td>HeFo</td>
</tr>
<tr>
<td>Acanthagynys rufogularis</td>
<td>1.643</td>
<td>7</td>
<td>InAe</td>
</tr>
<tr>
<td>Cuculus pyrrhophanus</td>
<td>1.679</td>
<td>8</td>
<td>InTe</td>
</tr>
<tr>
<td>Aegotheles cristatus</td>
<td>1.699</td>
<td>8</td>
<td>InTe</td>
</tr>
<tr>
<td>Halcyon pyrrhopysia</td>
<td>1.719</td>
<td>8</td>
<td>InTe</td>
</tr>
<tr>
<td>Psophotus varius</td>
<td>1.778</td>
<td>9</td>
<td>GrTe</td>
</tr>
<tr>
<td>Oreoica guturalis</td>
<td>1.792</td>
<td>9</td>
<td>InTe</td>
</tr>
<tr>
<td>Platycercus icterotis</td>
<td>1.801</td>
<td>9</td>
<td>GrFo</td>
</tr>
<tr>
<td>Manorina flaviula</td>
<td>1.829</td>
<td>9</td>
<td>NeFo</td>
</tr>
<tr>
<td>Cinclosoma castanotum</td>
<td>1.865</td>
<td>9</td>
<td>GrTe</td>
</tr>
<tr>
<td>Anthochaera chrysoptera</td>
<td>1.871</td>
<td>9</td>
<td>NeFo</td>
</tr>
</tbody>
</table>
Table A3 (Continued)

<table>
<thead>
<tr>
<th>Latin name</th>
<th>Body mass</th>
<th>Aggregation</th>
<th>Functional group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colluricincla harmonica</td>
<td>1.879</td>
<td>9</td>
<td>InFo</td>
</tr>
<tr>
<td>Cuculus pallidus</td>
<td>1.934</td>
<td>10</td>
<td>HeTe</td>
</tr>
<tr>
<td>Turnix varia</td>
<td>1.944</td>
<td>10</td>
<td>GrTe</td>
</tr>
<tr>
<td>Caprimulgus guttatus</td>
<td>1.945</td>
<td>10</td>
<td>InAe</td>
</tr>
<tr>
<td>Grallina cyanoleuca</td>
<td>1.949</td>
<td>10</td>
<td>InTe</td>
</tr>
<tr>
<td>Nymphicus hollandicus</td>
<td>1.954</td>
<td>10</td>
<td>GrTe</td>
</tr>
<tr>
<td>Cracticus torquatus</td>
<td>1.966</td>
<td>10</td>
<td>InFo</td>
</tr>
<tr>
<td>Peltodyas australis</td>
<td>1.966</td>
<td>10</td>
<td>InTe</td>
</tr>
<tr>
<td>Coracina novaeollandiae</td>
<td>1.970</td>
<td>10</td>
<td>InTe</td>
</tr>
<tr>
<td>Coturnix australis</td>
<td>1.974</td>
<td>10</td>
<td>GrTe</td>
</tr>
<tr>
<td>Polytelis anthopeplus</td>
<td>2.057</td>
<td>11</td>
<td>GrTe</td>
</tr>
<tr>
<td>Anthochaera carunculata</td>
<td>2.097</td>
<td>11</td>
<td>NeFo</td>
</tr>
<tr>
<td>Purpureicepsalus spurious</td>
<td>2.107</td>
<td>11</td>
<td>GrFo</td>
</tr>
<tr>
<td>Barnardius zonarius</td>
<td>2.125</td>
<td>11</td>
<td>NeFo</td>
</tr>
<tr>
<td>Coracina maxima</td>
<td>2.126</td>
<td>11</td>
<td>InTe</td>
</tr>
<tr>
<td>Falco cenchroides</td>
<td>2.193</td>
<td>12</td>
<td>InAe</td>
</tr>
<tr>
<td>Cracticus nigroauralis</td>
<td>2.193</td>
<td>12</td>
<td>InTe</td>
</tr>
<tr>
<td>Ninox novaeollandiae</td>
<td>2.241</td>
<td>12</td>
<td>InAe</td>
</tr>
<tr>
<td>Accipiter cirrhocephalus</td>
<td>2.255</td>
<td>12</td>
<td>CaAe</td>
</tr>
<tr>
<td>Ocyphaps lophotes</td>
<td>2.264</td>
<td>12</td>
<td>GrTe</td>
</tr>
<tr>
<td>Vanellus tricolor</td>
<td>2.265</td>
<td>12</td>
<td>InTe</td>
</tr>
<tr>
<td>Phaps elegans</td>
<td>2.301</td>
<td>12</td>
<td>GrTe</td>
</tr>
<tr>
<td>Elanus notatus</td>
<td>2.398</td>
<td>13</td>
<td>CaAe</td>
</tr>
<tr>
<td>Falco longipennis</td>
<td>2.403</td>
<td>13</td>
<td>CaAe</td>
</tr>
<tr>
<td>Phaps chalcoptera</td>
<td>2.491</td>
<td>13</td>
<td>GrFo</td>
</tr>
<tr>
<td>Cacatuus leuceteer</td>
<td>2.491</td>
<td>13</td>
<td>HeFo</td>
</tr>
<tr>
<td>Gymnorhina tibicen</td>
<td>2.497</td>
<td>13</td>
<td>InTe</td>
</tr>
<tr>
<td>Cacatuus roseicapilla</td>
<td>2.505</td>
<td>13</td>
<td>GrTe</td>
</tr>
<tr>
<td>Podargus strioides</td>
<td>2.544</td>
<td>13</td>
<td>InTe</td>
</tr>
<tr>
<td>Circus assimilis</td>
<td>2.623</td>
<td>14</td>
<td>InAe</td>
</tr>
<tr>
<td>Ninox conniixs</td>
<td>2.665</td>
<td>14</td>
<td>CaAe</td>
</tr>
<tr>
<td>Lophoictinia isura</td>
<td>2.700</td>
<td>14</td>
<td>CaAe</td>
</tr>
<tr>
<td>Accipiter fasciatus</td>
<td>2.708</td>
<td>14</td>
<td>CaAe</td>
</tr>
<tr>
<td>Tyto alba</td>
<td>2.719</td>
<td>14</td>
<td>CaAe</td>
</tr>
<tr>
<td>Cacatuus sanguinea</td>
<td>2.720</td>
<td>14</td>
<td>GrTe</td>
</tr>
<tr>
<td>Falco berigora</td>
<td>2.740</td>
<td>14</td>
<td>CaTe</td>
</tr>
<tr>
<td>Ardea novaeollandiae</td>
<td>2.742</td>
<td>14</td>
<td>CaAq</td>
</tr>
<tr>
<td>Tyto novaeollandiae</td>
<td>2.785</td>
<td>14</td>
<td>CaAe</td>
</tr>
<tr>
<td>Calyptorhynchus magnificus</td>
<td>2.796</td>
<td>14</td>
<td>HeFo</td>
</tr>
<tr>
<td>Ardea pacifica</td>
<td>2.813</td>
<td>14</td>
<td>CaAq</td>
</tr>
<tr>
<td>Corvus coronoides</td>
<td>2.829</td>
<td>14</td>
<td>CaTe</td>
</tr>
<tr>
<td>Burhinus magnoirostris</td>
<td>2.836</td>
<td>14</td>
<td>InTe</td>
</tr>
<tr>
<td>Cacatuus tenuirostris</td>
<td>2.869</td>
<td>14</td>
<td>HeTe</td>
</tr>
<tr>
<td>Falco peregrinus</td>
<td>2.893</td>
<td>14</td>
<td>CaAe</td>
</tr>
<tr>
<td>Halistastus sphemarus</td>
<td>2.903</td>
<td>14</td>
<td>CaAe</td>
</tr>
<tr>
<td>Calyptorhynchus funereus</td>
<td>2.904</td>
<td>14</td>
<td>GrFo</td>
</tr>
<tr>
<td>Hieraaetus morphnoides</td>
<td>2.924</td>
<td>14</td>
<td>CaAe</td>
</tr>
<tr>
<td>Chenonetta jubata</td>
<td>2.940</td>
<td>14</td>
<td>HeTe</td>
</tr>
<tr>
<td>Tadorna tadornoides</td>
<td>3.111</td>
<td>15</td>
<td>HeAq</td>
</tr>
<tr>
<td>Threskiornis spinicollos</td>
<td>3.255</td>
<td>15</td>
<td>InTe</td>
</tr>
<tr>
<td>Leipsa occipita</td>
<td>3.273</td>
<td>15</td>
<td>HeTe</td>
</tr>
<tr>
<td>Aquila audax</td>
<td>3.544</td>
<td>16</td>
<td>CaAe</td>
</tr>
<tr>
<td>Ardea cristalis</td>
<td>3.799</td>
<td>16</td>
<td>InTe</td>
</tr>
<tr>
<td>Dromalus novaeollandiae</td>
<td>4.494</td>
<td>16</td>
<td>HeTe</td>
</tr>
</tbody>
</table>

Each distribution includes Latin names, log10-transformed body masses, body mass aggregation membership, and functional group code used in richness simulations. The first two letters (prefix) of the functional group code represent the diet component and the latter two letters (suffix) represent foraging strata. Key to prefixes: Ca = carnivore; Gr = granivore; He = herbivore; In = insectivore; Ne = nectarivore; Om = omnivore. Key to suffixes: Ae = aerial; Aq = aquatic; Ar = arboreal; Ba = bark; Fo = foliage; Fs = fossorial; Te = terrestrial.
<table>
<thead>
<tr>
<th>Latin name</th>
<th>Body mass</th>
<th>Aggregation</th>
<th>Functional group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Estrilda astrilid</td>
<td>0.675</td>
<td>1</td>
<td>GrFo</td>
</tr>
<tr>
<td>Nectarinia chalybea</td>
<td>0.937</td>
<td>1</td>
<td>NeAe</td>
</tr>
<tr>
<td>Cisticola florivora</td>
<td>0.954</td>
<td>1</td>
<td>InTe</td>
</tr>
<tr>
<td>Nectarinia violacea</td>
<td>0.964</td>
<td>1</td>
<td>NeFo</td>
</tr>
<tr>
<td>Prinia maculosa</td>
<td>1.000</td>
<td>1</td>
<td>InFo</td>
</tr>
<tr>
<td>Cisticola subrubricapilla</td>
<td>1.021</td>
<td>1</td>
<td>InFo</td>
</tr>
<tr>
<td>Sylviaetta rubescens</td>
<td>1.053</td>
<td>1</td>
<td>InFo</td>
</tr>
<tr>
<td>Apalis thoracica</td>
<td>1.083</td>
<td>1</td>
<td>InFo</td>
</tr>
<tr>
<td>Batis capensis</td>
<td>1.107</td>
<td>1</td>
<td>InFo</td>
</tr>
<tr>
<td>Cisticola tinniens</td>
<td>1.111</td>
<td>1</td>
<td>InTe</td>
</tr>
<tr>
<td>Riparia paludicola</td>
<td>1.127</td>
<td>1</td>
<td>InAe</td>
</tr>
<tr>
<td>Zosterops virens</td>
<td>1.127</td>
<td>1</td>
<td>NeFo</td>
</tr>
<tr>
<td>Serinus canicollis</td>
<td>1.140</td>
<td>1</td>
<td>GrTe</td>
</tr>
<tr>
<td>Saxicola torquata</td>
<td>1.185</td>
<td>2</td>
<td>InAe</td>
</tr>
<tr>
<td>Parisoma subscaureulum</td>
<td>1.193</td>
<td>2</td>
<td>InFo</td>
</tr>
<tr>
<td>Hirundo rustica</td>
<td>1.204</td>
<td>2</td>
<td>InAe</td>
</tr>
<tr>
<td>Euplectes orix</td>
<td>1.211</td>
<td>2</td>
<td>GrTe</td>
</tr>
<tr>
<td>Serinus flaviventris</td>
<td>1.212</td>
<td>2</td>
<td>GrTe</td>
</tr>
<tr>
<td>Nectarinia famosa</td>
<td>1.233</td>
<td>2</td>
<td>NeFo</td>
</tr>
<tr>
<td>Euplectes capensis</td>
<td>1.260</td>
<td>2</td>
<td>GrTe</td>
</tr>
<tr>
<td>Cercomela situata</td>
<td>1.270</td>
<td>2</td>
<td>InAe</td>
</tr>
<tr>
<td>Hirundo rupestris</td>
<td>1.279</td>
<td>2</td>
<td>InAe</td>
</tr>
<tr>
<td>Serinus sulphuratus</td>
<td>1.283</td>
<td>2</td>
<td>GrTe</td>
</tr>
<tr>
<td>Parus afer</td>
<td>1.297</td>
<td>2</td>
<td>InBa</td>
</tr>
<tr>
<td>Calandrella cinerea</td>
<td>1.316</td>
<td>2</td>
<td>InTe</td>
</tr>
<tr>
<td>Motacilla capensis</td>
<td>1.318</td>
<td>2</td>
<td>InTe</td>
</tr>
<tr>
<td>Hirundo albicollari</td>
<td>1.328</td>
<td>2</td>
<td>InAe</td>
</tr>
<tr>
<td>Passer melanurus</td>
<td>1.340</td>
<td>2</td>
<td>GrTe</td>
</tr>
<tr>
<td>Cercomela familiaris</td>
<td>1.342</td>
<td>2</td>
<td>InTe</td>
</tr>
<tr>
<td>Emberiza capensis</td>
<td>1.350</td>
<td>2</td>
<td>GrTe</td>
</tr>
<tr>
<td>Anthus novaeseelandiae</td>
<td>1.384</td>
<td>3</td>
<td>InTe</td>
</tr>
<tr>
<td>Sigelus silens</td>
<td>1.408</td>
<td>3</td>
<td>InAe</td>
</tr>
<tr>
<td>Serinus albogularis</td>
<td>1.413</td>
<td>3</td>
<td>GrTe</td>
</tr>
<tr>
<td>Hirundo cucullata</td>
<td>1.431</td>
<td>3</td>
<td>InAe</td>
</tr>
<tr>
<td>Anthus leucophrys</td>
<td>1.431</td>
<td>3</td>
<td>InTe</td>
</tr>
<tr>
<td>Cossypha caffra</td>
<td>1.455</td>
<td>3</td>
<td>InTe</td>
</tr>
<tr>
<td>Mirafris apiata</td>
<td>1.487</td>
<td>3</td>
<td>InTe</td>
</tr>
<tr>
<td>Sphenoeacus afer</td>
<td>1.497</td>
<td>3</td>
<td>InTe</td>
</tr>
<tr>
<td>Lybius leucomelas</td>
<td>1.508</td>
<td>3</td>
<td>HeFo</td>
</tr>
<tr>
<td>Pycnonotus capensis</td>
<td>1.597</td>
<td>4</td>
<td>HeFo</td>
</tr>
<tr>
<td>Promerops cafer</td>
<td>1.606</td>
<td>4</td>
<td>NeFo</td>
</tr>
<tr>
<td>Oena capensis</td>
<td>1.608</td>
<td>4</td>
<td>GrTe</td>
</tr>
<tr>
<td>Colius colius</td>
<td>1.617</td>
<td>4</td>
<td>HeFo</td>
</tr>
<tr>
<td>Lanius collaris</td>
<td>1.618</td>
<td>4</td>
<td>InTe</td>
</tr>
<tr>
<td>Plococapens spicatus</td>
<td>1.627</td>
<td>4</td>
<td>InTe</td>
</tr>
<tr>
<td>Apus barbatus</td>
<td>1.631</td>
<td>4</td>
<td>InAe</td>
</tr>
<tr>
<td>Caprimulgus pectoralis</td>
<td>1.674</td>
<td>5</td>
<td>InAe</td>
</tr>
<tr>
<td>Macronyx capensis</td>
<td>1.677</td>
<td>5</td>
<td>InTe</td>
</tr>
<tr>
<td>Lanius ferrugineus</td>
<td>1.688</td>
<td>5</td>
<td>InTe</td>
</tr>
<tr>
<td>Colius striatus</td>
<td>1.708</td>
<td>5</td>
<td>HeFo</td>
</tr>
<tr>
<td>Colius indicus</td>
<td>1.751</td>
<td>6</td>
<td>HeFo</td>
</tr>
<tr>
<td>Monticola rupestris</td>
<td>1.778</td>
<td>6</td>
<td>InTe</td>
</tr>
<tr>
<td>Upupa epops</td>
<td>1.788</td>
<td>6</td>
<td>InTe</td>
</tr>
<tr>
<td>Malaconotus zeylonus</td>
<td>1.797</td>
<td>6</td>
<td>InTe</td>
</tr>
<tr>
<td>Creatophora cinerea</td>
<td>1.826</td>
<td>6</td>
<td>InTe</td>
</tr>
<tr>
<td>Turdus olivaceus</td>
<td>1.868</td>
<td>6</td>
<td>InTe</td>
</tr>
<tr>
<td>Apus melba</td>
<td>1.881</td>
<td>6</td>
<td>InAe</td>
</tr>
<tr>
<td>Streptopelia senegalensis</td>
<td>2.004</td>
<td>7</td>
<td>GrTe</td>
</tr>
<tr>
<td>Spreo bicolor</td>
<td>2.021</td>
<td>7</td>
<td>InTe</td>
</tr>
<tr>
<td>Geocolaptes olivaceus</td>
<td>2.079</td>
<td>7</td>
<td>InTe</td>
</tr>
<tr>
<td>Onychognathus morio</td>
<td>2.124</td>
<td>7</td>
<td>InTe</td>
</tr>
<tr>
<td>Streptopelia cupicola</td>
<td>2.152</td>
<td>7</td>
<td>GrTe</td>
</tr>
<tr>
<td>Vanellus coronatus</td>
<td>2.223</td>
<td>7</td>
<td>InTe</td>
</tr>
<tr>
<td>Falco tinnunculus</td>
<td>2.304</td>
<td>7</td>
<td>CaAe</td>
</tr>
<tr>
<td>Elanus caerules</td>
<td>2.522</td>
<td>8</td>
<td>CaAe</td>
</tr>
</tbody>
</table>
Each distribution includes Latin names, log10-transformed body masses, body mass aggregation membership, and functional group code used in richness simulations. The first two letters (prefix) of the functional group code represent the diet component and the latter two letters (suffix) represent foraging strata. Key to prefixes: Ca = carnivore; Gr = granivore; He = herbivore; In = insectivore; Ne = nectarivore; Om = omnivore. Key to suffixes: Ae = aerial; Aq = aquatic; Ar = arboreal; Ba = bark; Fo = foliage; Fs = fossorial; Te = terrestrial.

### Table A4 (Continued)

<table>
<thead>
<tr>
<th>Latin name</th>
<th>Body mass</th>
<th>Aggregation</th>
<th>Functional group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bubulcus (=Ardeola) ibis</td>
<td>2.529</td>
<td>8</td>
<td>InTe</td>
</tr>
<tr>
<td>Columba guinea</td>
<td>2.547</td>
<td>8</td>
<td>GrTe</td>
</tr>
<tr>
<td>Francolinus africanus</td>
<td>2.592</td>
<td>8</td>
<td>HeTe</td>
</tr>
<tr>
<td>Burhinus capensis</td>
<td>2.626</td>
<td>8</td>
<td>InTe</td>
</tr>
<tr>
<td>Circus ranivorus</td>
<td>2.705</td>
<td>8</td>
<td>CaAe</td>
</tr>
<tr>
<td>Corvus albus</td>
<td>2.723</td>
<td>8</td>
<td>HeTe</td>
</tr>
<tr>
<td>Francolinus capensis</td>
<td>2.814</td>
<td>8</td>
<td>InTe</td>
</tr>
<tr>
<td>Afrotis afranoides</td>
<td>2.840</td>
<td>8</td>
<td>InTe</td>
</tr>
<tr>
<td>Corvus capensis</td>
<td>2.843</td>
<td>8</td>
<td>CaAe</td>
</tr>
<tr>
<td>Buteo buteo</td>
<td>2.942</td>
<td>8</td>
<td>CaAe</td>
</tr>
<tr>
<td>Burhinus capensis</td>
<td>2.954</td>
<td>8</td>
<td>InTe</td>
</tr>
<tr>
<td>Aquila melanocephala</td>
<td>3.025</td>
<td>8</td>
<td>InTe</td>
</tr>
<tr>
<td>Buteo rufusosus</td>
<td>3.066</td>
<td>8</td>
<td>CaAe</td>
</tr>
<tr>
<td>Sagittarius serpantianus</td>
<td>3.557</td>
<td>9</td>
<td>InTe</td>
</tr>
<tr>
<td>Aquila verreauxii</td>
<td>3.613</td>
<td>9</td>
<td>CaAe</td>
</tr>
<tr>
<td>Otis denhami</td>
<td>3.615</td>
<td>9</td>
<td>InTe</td>
</tr>
</tbody>
</table>

### Table A5 – Mammal species distribution for Mediterranean-climate California, USA

<table>
<thead>
<tr>
<th>Latin name</th>
<th>Body mass</th>
<th>Aggregation</th>
<th>Functional group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sorex ornatus</td>
<td>0.698</td>
<td>1</td>
<td>InTe</td>
</tr>
<tr>
<td>Sorex lolosges</td>
<td>0.707</td>
<td>1</td>
<td>InTe</td>
</tr>
<tr>
<td>Reithrodontomys megalotis</td>
<td>1.049</td>
<td>1</td>
<td>GrTe</td>
</tr>
<tr>
<td>Peromyscus maniculatus</td>
<td>1.299</td>
<td>2</td>
<td>GrTe</td>
</tr>
<tr>
<td>Peromyscus boylii</td>
<td>1.329</td>
<td>2</td>
<td>HeAr</td>
</tr>
<tr>
<td>Peromyscus truei</td>
<td>1.427</td>
<td>2</td>
<td>GrTe</td>
</tr>
<tr>
<td>Peromyscus californicus</td>
<td>1.656</td>
<td>3</td>
<td>GrTe</td>
</tr>
<tr>
<td>Tamias obscurus</td>
<td>1.748</td>
<td>3</td>
<td>HeAr</td>
</tr>
<tr>
<td>Dipodomys heermanni</td>
<td>1.857</td>
<td>3</td>
<td>GrTe</td>
</tr>
<tr>
<td>Dipodomys merriami</td>
<td>1.875</td>
<td>3</td>
<td>GrTe</td>
</tr>
<tr>
<td>Dipodomys venustus</td>
<td>1.929</td>
<td>3</td>
<td>GrTe</td>
</tr>
<tr>
<td>Dipodomys elephantinus</td>
<td>1.930</td>
<td>3</td>
<td>GrTe</td>
</tr>
<tr>
<td>Thomomys bottae</td>
<td>2.049</td>
<td>3</td>
<td>HeFi</td>
</tr>
<tr>
<td>Neotoma lepida</td>
<td>2.164</td>
<td>3</td>
<td>HeTe</td>
</tr>
<tr>
<td>Mastota frenata</td>
<td>2.167</td>
<td>3</td>
<td>CaTe</td>
</tr>
<tr>
<td>Peromyscus eremicus</td>
<td>2.276</td>
<td>3</td>
<td>GrTe</td>
</tr>
<tr>
<td>Neotoma fuscipes</td>
<td>2.281</td>
<td>3</td>
<td>HeAr</td>
</tr>
<tr>
<td>Spermophilus beecheyi</td>
<td>2.781</td>
<td>4</td>
<td>HeTe</td>
</tr>
<tr>
<td>Sylvilagus bachmani</td>
<td>2.785</td>
<td>4</td>
<td>HeTe</td>
</tr>
<tr>
<td>Sylvilagus auduboni</td>
<td>2.879</td>
<td>4</td>
<td>HeTe</td>
</tr>
<tr>
<td>Spilogale gracilis</td>
<td>2.888</td>
<td>4</td>
<td>CaTe</td>
</tr>
<tr>
<td>Bassariscus astutus</td>
<td>3.053</td>
<td>4</td>
<td>CaTe</td>
</tr>
<tr>
<td>Mephitus mephitis</td>
<td>3.253</td>
<td>4</td>
<td>InTe</td>
</tr>
<tr>
<td>Urocyon cinereargentipes</td>
<td>3.548</td>
<td>5</td>
<td>CaTe</td>
</tr>
<tr>
<td>Procyon lotor psora</td>
<td>3.557</td>
<td>5</td>
<td>OmTe</td>
</tr>
<tr>
<td>Taxidea taxus</td>
<td>3.857</td>
<td>5</td>
<td>CaTe</td>
</tr>
<tr>
<td>Lynx rufus</td>
<td>3.889</td>
<td>5</td>
<td>CaTe</td>
</tr>
<tr>
<td>Canis latrans</td>
<td>4.102</td>
<td>5</td>
<td>CaTe</td>
</tr>
<tr>
<td>Odocoloeus hemionus</td>
<td>4.635</td>
<td>6</td>
<td>HeTe</td>
</tr>
<tr>
<td>Felis concolor</td>
<td>4.754</td>
<td>6</td>
<td>CaTe</td>
</tr>
<tr>
<td>Felis onca</td>
<td>5.061</td>
<td>6</td>
<td>CaTe</td>
</tr>
<tr>
<td>Ursos arctos</td>
<td>5.190</td>
<td>6</td>
<td>OmTe</td>
</tr>
</tbody>
</table>

Each distribution includes Latin names, log10-transformed body masses, body mass aggregation membership, and functional group code used in richness simulations. The first two letters (prefix) of the functional group code represent the diet component and the latter two letters (suffix) represent foraging strata. Key to prefixes: Ca = carnivore; Gr = granivore; He = herbivore; In = insectivore; Ne = nectarivore; Om = omnivore. Key to suffixes: Ae = aerial; Aq = aquatic; Ar = arboreal; Ba = bark; Fo = foliage; Fs = fossorial; Te = terrestrial.
<table>
<thead>
<tr>
<th>Latin name</th>
<th>Body mass</th>
<th>Aggregation</th>
<th>Functional group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mus minutoides</td>
<td>0.767</td>
<td>1</td>
<td>HeTe</td>
</tr>
<tr>
<td>Suncus varilla</td>
<td>0.813</td>
<td>1</td>
<td>InTe</td>
</tr>
<tr>
<td>Dendromus melanotis</td>
<td>0.826</td>
<td>1</td>
<td>InTe</td>
</tr>
<tr>
<td>Crocidura cyanea</td>
<td>0.934</td>
<td>1</td>
<td>InTe</td>
</tr>
<tr>
<td>Dendromus mesomelas</td>
<td>1.053</td>
<td>1</td>
<td>InTe</td>
</tr>
<tr>
<td>Malacothrix typica</td>
<td>1.127</td>
<td>1</td>
<td>HeTe</td>
</tr>
<tr>
<td>Myosorex varius</td>
<td>1.130</td>
<td>1</td>
<td>InTe</td>
</tr>
<tr>
<td>Acomys subspinosus</td>
<td>1.325</td>
<td>2</td>
<td>HeTe</td>
</tr>
<tr>
<td>Steatomys krebisi</td>
<td>1.380</td>
<td>2</td>
<td>HeTe</td>
</tr>
<tr>
<td>Graphiurus murinus</td>
<td>1.450</td>
<td>2</td>
<td>InTe</td>
</tr>
<tr>
<td>Gerbillurus poebra</td>
<td>1.511</td>
<td>2</td>
<td>HeTe</td>
</tr>
<tr>
<td>Rhabdomys pumilio</td>
<td>1.559</td>
<td>2</td>
<td>HeTe</td>
</tr>
<tr>
<td>Macroscelides proboscideus</td>
<td>1.582</td>
<td>2</td>
<td>InTe</td>
</tr>
<tr>
<td>Myomyscus verroxií</td>
<td>1.613</td>
<td>2</td>
<td>InTe</td>
</tr>
<tr>
<td>Desmodillus auricularis</td>
<td>1.664</td>
<td>2</td>
<td>HeTe</td>
</tr>
<tr>
<td>Aethomys namequesiens</td>
<td>1.688</td>
<td>2</td>
<td>HeTe</td>
</tr>
<tr>
<td>Chrysomys asiatica</td>
<td>1.690</td>
<td>2</td>
<td>InFs</td>
</tr>
<tr>
<td>Amblysomus hottentotus</td>
<td>1.832</td>
<td>3</td>
<td>InFs</td>
</tr>
<tr>
<td>Graphiurus ocularis</td>
<td>1.838</td>
<td>3</td>
<td>InTe</td>
</tr>
<tr>
<td>Cryptomys hottentotus</td>
<td>1.897</td>
<td>3</td>
<td>HeFs</td>
</tr>
<tr>
<td>Mystromys albicaudatus</td>
<td>1.939</td>
<td>3</td>
<td>HeTe</td>
</tr>
<tr>
<td>Dasymys inornatus</td>
<td>1.972</td>
<td>3</td>
<td>HeTe</td>
</tr>
<tr>
<td>Tatera afra</td>
<td>1.987</td>
<td>3</td>
<td>HeTe</td>
</tr>
<tr>
<td>Otomys saundersiae</td>
<td>2.013</td>
<td>3</td>
<td>HeTe</td>
</tr>
<tr>
<td>Otomys irroratus</td>
<td>2.072</td>
<td>3</td>
<td>HeTe</td>
</tr>
<tr>
<td>Crocidura flavescens</td>
<td>2.088</td>
<td>3</td>
<td>InTe</td>
</tr>
<tr>
<td>Otomys unisulcatus</td>
<td>2.095</td>
<td>3</td>
<td>HeTe</td>
</tr>
<tr>
<td>Otomys laminatus</td>
<td>2.176</td>
<td>3</td>
<td>HeTe</td>
</tr>
<tr>
<td>Georychus capensis</td>
<td>2.338</td>
<td>4</td>
<td>HeTe</td>
</tr>
<tr>
<td>Poecilogale albimucha</td>
<td>2.338</td>
<td>4</td>
<td>CaTe</td>
</tr>
<tr>
<td>Bathyrhexus sulius</td>
<td>2.796</td>
<td>4</td>
<td>HeFs</td>
</tr>
<tr>
<td>Ictonyx striatus</td>
<td>2.866</td>
<td>4</td>
<td>InTe</td>
</tr>
<tr>
<td>Herpestes pulverulentus</td>
<td>2.901</td>
<td>4</td>
<td>InTe</td>
</tr>
<tr>
<td>Cynictis penicillata</td>
<td>2.919</td>
<td>4</td>
<td>InTe</td>
</tr>
<tr>
<td>Pronolagus rupestris</td>
<td>3.210</td>
<td>5</td>
<td>HeTe</td>
</tr>
<tr>
<td>Genetta tigrina</td>
<td>3.270</td>
<td>5</td>
<td>CaTe</td>
</tr>
<tr>
<td>Genetta genetta</td>
<td>3.279</td>
<td>5</td>
<td>CaTe</td>
</tr>
<tr>
<td>Lepus capensis</td>
<td>3.310</td>
<td>5</td>
<td>HeTe</td>
</tr>
<tr>
<td>Vulpes chama</td>
<td>3.423</td>
<td>5</td>
<td>CaTe</td>
</tr>
<tr>
<td>Procavia capensis</td>
<td>3.480</td>
<td>5</td>
<td>HeTe</td>
</tr>
<tr>
<td>Atilax paludinosus</td>
<td>3.531</td>
<td>5</td>
<td>CaTe</td>
</tr>
<tr>
<td>Lepus saxatilis</td>
<td>3.556</td>
<td>5</td>
<td>HeTe</td>
</tr>
<tr>
<td>Felis ibyca</td>
<td>3.633</td>
<td>5</td>
<td>CaTe</td>
</tr>
<tr>
<td>Proteles cristatus</td>
<td>3.840</td>
<td>6</td>
<td>InTe</td>
</tr>
<tr>
<td>Canis mesomelas</td>
<td>3.898</td>
<td>6</td>
<td>CaTe</td>
</tr>
<tr>
<td>Mellivora capensis</td>
<td>3.899</td>
<td>6</td>
<td>CaTe</td>
</tr>
<tr>
<td>Oreotragus oreotragus</td>
<td>4.009</td>
<td>6</td>
<td>HeTe</td>
</tr>
<tr>
<td>Ruphiperus melanotis</td>
<td>4.011</td>
<td>6</td>
<td>HeTe</td>
</tr>
<tr>
<td>Felis caracal</td>
<td>4.029</td>
<td>6</td>
<td>CaTe</td>
</tr>
<tr>
<td>Felis serval</td>
<td>4.047</td>
<td>6</td>
<td>CaTe</td>
</tr>
<tr>
<td>Raphicerus campestris</td>
<td>4.053</td>
<td>6</td>
<td>HeTe</td>
</tr>
<tr>
<td>Aonyx capensis</td>
<td>4.061</td>
<td>6</td>
<td>CaAq</td>
</tr>
<tr>
<td>Hystrix australis</td>
<td>4.097</td>
<td>6</td>
<td>HeTe</td>
</tr>
<tr>
<td>Sylvicapra grimmia</td>
<td>4.207</td>
<td>6</td>
<td>HeTe</td>
</tr>
<tr>
<td>Pelea capreolus</td>
<td>4.352</td>
<td>7</td>
<td>HeTe</td>
</tr>
<tr>
<td>Papio ursinus</td>
<td>4.365</td>
<td>7</td>
<td>HeTe</td>
</tr>
<tr>
<td>Panthera pardus</td>
<td>4.416</td>
<td>7</td>
<td>CaTe</td>
</tr>
<tr>
<td>Hyaena brunnea</td>
<td>4.583</td>
<td>8</td>
<td>CaTe</td>
</tr>
<tr>
<td>Orycteropus afer</td>
<td>4.719</td>
<td>8</td>
<td>InTe</td>
</tr>
<tr>
<td>Damaliscus dorcas dorcas</td>
<td>4.826</td>
<td>8</td>
<td>HeTe</td>
</tr>
<tr>
<td>Allocapra cashmirica</td>
<td>5.134</td>
<td>9</td>
<td>HeTe</td>
</tr>
<tr>
<td>Panthera leo</td>
<td>5.193</td>
<td>9</td>
<td>CaTe</td>
</tr>
<tr>
<td>Equus zebra</td>
<td>5.388</td>
<td>9</td>
<td>HeTe</td>
</tr>
</tbody>
</table>
Each distribution includes Latin names, log10-transformed body masses, body mass aggregation membership, and functional group code used in richness simulations. The first two letters (prefix) of the functional group code represent the diet component and the latter two letters (suffix) represent foraging strata. Key to prefixes: Ca = carnivore; Gr = granivore; He = herbivore; In = insectivore; Ne = nectarivore; Om = omnivore. Key to suffixes: Ae = aerial; Aq = aquatic; Ar = arboreal; Ba = bark; Fo = foliage; Fs = fossorial; Te = terrestrial.

**Table A6 (Continued)**

<table>
<thead>
<tr>
<th>Latin name</th>
<th>Body mass</th>
<th>Aggregation</th>
<th>Functional group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Taurotragus oryx</td>
<td>5.587</td>
<td>9</td>
<td>HeTe</td>
</tr>
<tr>
<td>Diceros bicornis</td>
<td>5.939</td>
<td>9</td>
<td>HeTe</td>
</tr>
</tbody>
</table>

**Table A7 – Mammal species distribution for Mediterranean-climate southwestern Australia**

<table>
<thead>
<tr>
<th>Latin name</th>
<th>Body mass</th>
<th>Aggregation</th>
<th>Functional group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tarsipes rostratus</td>
<td>0.954</td>
<td>1</td>
<td>HeAr</td>
</tr>
<tr>
<td>Cercartetus concinnus</td>
<td>1.114</td>
<td>1</td>
<td>InAr</td>
</tr>
<tr>
<td>Sminthopsis dolichura</td>
<td>1.134</td>
<td>1</td>
<td>InTe</td>
</tr>
<tr>
<td>Sminthopsis crassicaudata</td>
<td>1.176</td>
<td>1</td>
<td>InTe</td>
</tr>
<tr>
<td>Sminthopsis griseoventer</td>
<td>1.243</td>
<td>1</td>
<td>InTe</td>
</tr>
<tr>
<td>Sminthopsis gilberti</td>
<td>1.290</td>
<td>1</td>
<td>InTe</td>
</tr>
<tr>
<td>Sminthopsis granulipes</td>
<td>1.398</td>
<td>1</td>
<td>InTe</td>
</tr>
<tr>
<td>Pseudomys albocinereus</td>
<td>1.484</td>
<td>1</td>
<td>HeTe</td>
</tr>
<tr>
<td>Pseudomys nanus</td>
<td>1.531</td>
<td>1</td>
<td>HeTe</td>
</tr>
<tr>
<td>Pseudomys occidentalis</td>
<td>1.531</td>
<td>1</td>
<td>HeTe</td>
</tr>
<tr>
<td>Notomys alexis</td>
<td>1.544</td>
<td>1</td>
<td>GrTe</td>
</tr>
<tr>
<td>Antechinus flavipes</td>
<td>1.653</td>
<td>1</td>
<td>InTe</td>
</tr>
<tr>
<td>Pseudomys fieldi</td>
<td>1.653</td>
<td>1</td>
<td>HeTe</td>
</tr>
<tr>
<td>Phascogale calura</td>
<td>1.712</td>
<td>1</td>
<td>InAr</td>
</tr>
<tr>
<td>Notomys mitchelli</td>
<td>1.716</td>
<td>1</td>
<td>GrTe</td>
</tr>
<tr>
<td>Parantechinus apicalis</td>
<td>1.837</td>
<td>2</td>
<td>InTe</td>
</tr>
<tr>
<td>Pseudomys shortridgei</td>
<td>1.845</td>
<td>2</td>
<td>HeTe</td>
</tr>
<tr>
<td>Notomys longicaudatus</td>
<td>2.000</td>
<td>2</td>
<td>GrTe</td>
</tr>
<tr>
<td>Rattus tunneyi</td>
<td>2.093</td>
<td>2</td>
<td>HeTe</td>
</tr>
<tr>
<td>Rattus fuscipes</td>
<td>2.122</td>
<td>2</td>
<td>InTe</td>
</tr>
<tr>
<td>Phascogale tapoatula</td>
<td>2.287</td>
<td>3</td>
<td>InAr</td>
</tr>
<tr>
<td>Perameles bougainville</td>
<td>2.354</td>
<td>3</td>
<td>HeTe</td>
</tr>
<tr>
<td>Myrmecobius fasciatus</td>
<td>2.673</td>
<td>3</td>
<td>InTe</td>
</tr>
<tr>
<td>Hydromys chrysogaster</td>
<td>2.833</td>
<td>4</td>
<td>InAq</td>
</tr>
<tr>
<td>Isoodon obesulus</td>
<td>2.889</td>
<td>4</td>
<td>InTe</td>
</tr>
<tr>
<td>Pseudochirulus occidentalis</td>
<td>3.000</td>
<td>4</td>
<td>HeAr</td>
</tr>
<tr>
<td>Desyurus geoffroii</td>
<td>3.041</td>
<td>4</td>
<td>CaTe</td>
</tr>
<tr>
<td>Potorus tridactylus</td>
<td>3.041</td>
<td>4</td>
<td>HeTe</td>
</tr>
<tr>
<td>Lagorchestes hirsutus</td>
<td>3.102</td>
<td>4</td>
<td>HeTe</td>
</tr>
<tr>
<td>Bettongia penicillata</td>
<td>3.114</td>
<td>4</td>
<td>HeTe</td>
</tr>
<tr>
<td>Bettongia lesueur</td>
<td>3.176</td>
<td>4</td>
<td>HeTe</td>
</tr>
<tr>
<td>Lagostrophus fasciatus</td>
<td>3.230</td>
<td>4</td>
<td>HeTe</td>
</tr>
<tr>
<td>Trichosurus vulpecula</td>
<td>3.419</td>
<td>5</td>
<td>HeAr</td>
</tr>
<tr>
<td>Setonix brachyrurus</td>
<td>3.512</td>
<td>5</td>
<td>HeTe</td>
</tr>
<tr>
<td>Onychogalea lunata</td>
<td>3.544</td>
<td>5</td>
<td>HeTe</td>
</tr>
<tr>
<td>Petrogale lateralis</td>
<td>3.602</td>
<td>5</td>
<td>HeTe</td>
</tr>
<tr>
<td>Tachyglossus aculeatus</td>
<td>3.653</td>
<td>5</td>
<td>InTe</td>
</tr>
<tr>
<td>Macropus eugenii</td>
<td>3.813</td>
<td>5</td>
<td>HeTe</td>
</tr>
<tr>
<td>Macropus irma</td>
<td>3.903</td>
<td>5</td>
<td>HeTe</td>
</tr>
<tr>
<td>Canis lupus</td>
<td>4.225</td>
<td>6</td>
<td>CaTe</td>
</tr>
<tr>
<td>Macropus robustus</td>
<td>4.327</td>
<td>6</td>
<td>HeTe</td>
</tr>
<tr>
<td>Macropus fuliginosus</td>
<td>4.345</td>
<td>6</td>
<td>HeTe</td>
</tr>
</tbody>
</table>

Each distribution includes Latin names, log10-transformed body masses, body mass aggregation membership, and functional group code used in richness simulations. The first two letters (prefix) of the functional group code represent the diet component and the latter two letters (suffix) represent foraging strata. Key to prefixes: Ca = carnivore; Gr = granivore; He = herbivore; In = insectivore; Ne = nectarivore; Om = omnivore. Key to suffixes: Ae = aerial; Aq = aquatic; Ar = arboreal; Ba = bark; Fo = foliage; Fs = fossorial; Te = terrestrial.
Table A8 – Mammal species distribution for Mediterranean-climate Chile

<table>
<thead>
<tr>
<th>Latin name</th>
<th>Body mass</th>
<th>Aggregation</th>
<th>Functional group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marmosa elegans</td>
<td>1.481</td>
<td>1</td>
<td>InTe</td>
</tr>
<tr>
<td>Oryzomys longicaudatus</td>
<td>1.560</td>
<td>1</td>
<td>GrTe</td>
</tr>
<tr>
<td>Akodon olivaceus</td>
<td>1.639</td>
<td>1</td>
<td>GrTe</td>
</tr>
<tr>
<td>Phyllotis darwini</td>
<td>1.789</td>
<td>2</td>
<td>HeTe</td>
</tr>
<tr>
<td>Akodon longipilis</td>
<td>1.796</td>
<td>2</td>
<td>InTe</td>
</tr>
<tr>
<td>Chelomys macroury</td>
<td>1.865</td>
<td>2</td>
<td>GrTe</td>
</tr>
<tr>
<td>Eumomys mordax</td>
<td>1.914</td>
<td>2</td>
<td>HeTe</td>
</tr>
<tr>
<td>Octodon bradleyi</td>
<td>1.966</td>
<td>2</td>
<td>HeTe</td>
</tr>
<tr>
<td>Spalacopus cyanus</td>
<td>2.011</td>
<td>2</td>
<td>HeFs</td>
</tr>
<tr>
<td>Acomys fuscus</td>
<td>2.090</td>
<td>2</td>
<td>HeTe</td>
</tr>
<tr>
<td>Ctenomys saulius</td>
<td>2.215</td>
<td>2</td>
<td>HeTe</td>
</tr>
<tr>
<td>Octodon degus</td>
<td>2.264</td>
<td>2</td>
<td>HeAr</td>
</tr>
<tr>
<td>Abrocoma bennetti</td>
<td>2.363</td>
<td>2</td>
<td>HeAr</td>
</tr>
<tr>
<td>Octodon lunatus</td>
<td>2.367</td>
<td>2</td>
<td>HeTe</td>
</tr>
<tr>
<td>Lagidium viscacia</td>
<td>3.188</td>
<td>3</td>
<td>HeTe</td>
</tr>
<tr>
<td>Galictis guia</td>
<td>3.199</td>
<td>3</td>
<td>CaTe</td>
</tr>
<tr>
<td>Conepatus chinga</td>
<td>3.275</td>
<td>3</td>
<td>InTe</td>
</tr>
<tr>
<td>Felis guigna</td>
<td>3.348</td>
<td>3</td>
<td>CaTe</td>
</tr>
<tr>
<td>Felis colocolo</td>
<td>3.470</td>
<td>3</td>
<td>CaAr</td>
</tr>
<tr>
<td>Myocaster cuppus</td>
<td>3.579</td>
<td>3</td>
<td>HeAq</td>
</tr>
<tr>
<td>Dusicyon griseus</td>
<td>3.601</td>
<td>3</td>
<td>CaTe</td>
</tr>
<tr>
<td>Lutra felina</td>
<td>3.653</td>
<td>3</td>
<td>InAq</td>
</tr>
<tr>
<td>Dusicyon culpaeus</td>
<td>3.867</td>
<td>3</td>
<td>CaTe</td>
</tr>
<tr>
<td>Pudu puda</td>
<td>3.989</td>
<td>3</td>
<td>HeTe</td>
</tr>
<tr>
<td>Felis concolor</td>
<td>4.549</td>
<td>4</td>
<td>CaTe</td>
</tr>
<tr>
<td>Hippocamelus bisulcus</td>
<td>4.845</td>
<td>4</td>
<td>HeTe</td>
</tr>
<tr>
<td>Lama guanicoe</td>
<td>5.079</td>
<td>4</td>
<td>HeTe</td>
</tr>
</tbody>
</table>

Each distribution includes Latin names, log10-transformed body masses, body mass aggregation membership, and functional group code used in richness simulations. The first two letters (prefix) of the functional group code represent the diet component and the latter two letters (suffix) represent foraging strata. Key to prefixes: Ca = carnivore; Gr = granivore; He = herbivore; In = insectivore; Ne = nectarivore; Om = omnivore. Key to suffixes: Ae = aerial; Aq = aquatic; Ar = arboreal; Ba = bark; Fo = foliage; Fs = fossorial; Te = terrestrial.

Table A9 – Mammal species distribution for Mediterranean-climate Spain

<table>
<thead>
<tr>
<th>Latin name</th>
<th>Body mass</th>
<th>Aggregation</th>
<th>Functional group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Suncus etruscus</td>
<td>0.352</td>
<td>1</td>
<td>InTe</td>
</tr>
<tr>
<td>Sorex minutus</td>
<td>0.477</td>
<td>1</td>
<td>InTe</td>
</tr>
<tr>
<td>Micromys minutus</td>
<td>0.756</td>
<td>1</td>
<td>GrTe</td>
</tr>
<tr>
<td>Sorex granarius</td>
<td>0.796</td>
<td>1</td>
<td>GrTe</td>
</tr>
<tr>
<td>Crocidura russula</td>
<td>0.806</td>
<td>1</td>
<td>InTe</td>
</tr>
<tr>
<td>Crocidura suaveolens</td>
<td>0.825</td>
<td>1</td>
<td>InTe</td>
</tr>
<tr>
<td>Mus spretus</td>
<td>1.090</td>
<td>2</td>
<td>GrTe</td>
</tr>
<tr>
<td>Neomys fodiens</td>
<td>1.114</td>
<td>2</td>
<td>InAq</td>
</tr>
<tr>
<td>Neomys anomalus</td>
<td>1.134</td>
<td>2</td>
<td>InTe</td>
</tr>
<tr>
<td>Pitymys lasitanicus</td>
<td>1.212</td>
<td>2</td>
<td>HeTe</td>
</tr>
<tr>
<td>Microtus arvalis</td>
<td>1.262</td>
<td>2</td>
<td>HeFs</td>
</tr>
<tr>
<td>Mus domesticus</td>
<td>1.283</td>
<td>2</td>
<td>GrTe</td>
</tr>
<tr>
<td>Clethrionomys glareolus</td>
<td>1.288</td>
<td>2</td>
<td>HeTe</td>
</tr>
<tr>
<td>Apodemus sylvaticus</td>
<td>1.344</td>
<td>2</td>
<td>InTe</td>
</tr>
<tr>
<td>Microtus agrestis</td>
<td>1.344</td>
<td>2</td>
<td>HeTe</td>
</tr>
<tr>
<td>Pitymys duodecimcostatus</td>
<td>1.345</td>
<td>2</td>
<td>HeTe</td>
</tr>
<tr>
<td>Talpa caeca</td>
<td>1.505</td>
<td>3</td>
<td>InFs</td>
</tr>
<tr>
<td>Microtus nivalis</td>
<td>1.591</td>
<td>3</td>
<td>HeTe</td>
</tr>
<tr>
<td>Galemys pyrenaicus</td>
<td>1.760</td>
<td>3</td>
<td>InAq</td>
</tr>
<tr>
<td>Talpa europaea</td>
<td>1.881</td>
<td>3</td>
<td>InFs</td>
</tr>
<tr>
<td>Talpa romana</td>
<td>1.966</td>
<td>3</td>
<td>InFs</td>
</tr>
<tr>
<td>Elomys quercinus</td>
<td>1.980</td>
<td>3</td>
<td>HeTe</td>
</tr>
<tr>
<td>Rattus rattus</td>
<td>2.092</td>
<td>3</td>
<td>HeTe</td>
</tr>
<tr>
<td>Musculus nivalis</td>
<td>2.150</td>
<td>3</td>
<td>CaTe</td>
</tr>
</tbody>
</table>
Table A9 (Continued)

<table>
<thead>
<tr>
<th>Latin name</th>
<th>Body mass</th>
<th>Aggregation</th>
<th>Functional group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arvicola sapidus</td>
<td>2.230</td>
<td>3</td>
<td>HeAr</td>
</tr>
<tr>
<td>Myoxus glis</td>
<td>2.284</td>
<td>3</td>
<td>HeAr</td>
</tr>
<tr>
<td>Sciurus vulgaris</td>
<td>2.398</td>
<td>3</td>
<td>HeAr</td>
</tr>
<tr>
<td>Rattus norvegicus</td>
<td>2.455</td>
<td>3</td>
<td>HeAr</td>
</tr>
<tr>
<td>Erinaceus europaeus</td>
<td>2.805</td>
<td>4</td>
<td>InTe</td>
</tr>
<tr>
<td>Erinaceus algerius</td>
<td>2.845</td>
<td>4</td>
<td>InTe</td>
</tr>
<tr>
<td>Mustela putorius</td>
<td>3.000</td>
<td>4</td>
<td>CaTe</td>
</tr>
<tr>
<td>Martes foina</td>
<td>3.000</td>
<td>4</td>
<td>CaTe</td>
</tr>
<tr>
<td>Oryctolagus cuniculus</td>
<td>3.196</td>
<td>5</td>
<td>HeTe</td>
</tr>
<tr>
<td>Genetta genetta</td>
<td>3.236</td>
<td>5</td>
<td>CaTe</td>
</tr>
<tr>
<td>Lepus capensis</td>
<td>3.310</td>
<td>5</td>
<td>HeTe</td>
</tr>
<tr>
<td>Lepus granatensis</td>
<td>3.334</td>
<td>5</td>
<td>HeTe</td>
</tr>
<tr>
<td>Felis silvestris</td>
<td>3.385</td>
<td>5</td>
<td>CaTe</td>
</tr>
<tr>
<td>Hesperus ichneumon</td>
<td>3.474</td>
<td>5</td>
<td>CaTe</td>
</tr>
<tr>
<td>Vulpes vulpes</td>
<td>3.678</td>
<td>6</td>
<td>CaTe</td>
</tr>
<tr>
<td>Lutra lutra</td>
<td>3.796</td>
<td>6</td>
<td>CaAq</td>
</tr>
<tr>
<td>Meles meles</td>
<td>3.964</td>
<td>6</td>
<td>InTe</td>
</tr>
<tr>
<td>Lynx pardinus</td>
<td>4.043</td>
<td>6</td>
<td>CaTe</td>
</tr>
<tr>
<td>Macaca sylvarus</td>
<td>4.049</td>
<td>6</td>
<td>HeTe</td>
</tr>
<tr>
<td>Capreolus capreolus</td>
<td>4.079</td>
<td>6</td>
<td>HeTe</td>
</tr>
<tr>
<td>Castor fiber</td>
<td>4.145</td>
<td>7</td>
<td>CaTe</td>
</tr>
<tr>
<td>Canis lupus</td>
<td>4.632</td>
<td>7</td>
<td>HeTe</td>
</tr>
<tr>
<td>Sus scrofa</td>
<td>4.740</td>
<td>7</td>
<td>HeTe</td>
</tr>
<tr>
<td>Capra pyrenaica</td>
<td>4.760</td>
<td>7</td>
<td>HeTe</td>
</tr>
<tr>
<td>Ceruis elaphus</td>
<td>5.176</td>
<td>7</td>
<td>HeTe</td>
</tr>
<tr>
<td>Ursus arctos</td>
<td>5.247</td>
<td>7</td>
<td>HeTe</td>
</tr>
</tbody>
</table>

Each distribution includes Latin names, log10-transformed body masses, body mass aggregation membership, and functional group code used in richness simulations. The first two letters (prefix) of the functional group code represent the diet component and the latter two letters (suffix) represent foraging strata. Key to prefixes: Ca = carnivore; Gr = granivore; He = herbivore; In = insectivore; Ne = nectarivore; Om = omnivore. Key to suffixes: Ae = aerial; Aq = aquatic; Ar = arboreal; Ba = bark; Fo = foliage; Fs = fossorial; Te = terrestrial.

REFERENCES


