

" A POPULATION DISTRIBUTION MAP OF CHILE "

René Saa  
Edward Weber

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Rene Saa Vidal  
Instituto de Investigación  
de Recursos Naturales

Edward J. Libber  
Canadian University Service Overseas

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Chile has been taking a fairly regular and reasonably accurate population census since 1835. The most recent one, taken in 1960, is the thirteenth. Despite the availability of population data, however, a comprehensive and accurate population distribution map had not been compiled until the present. Several population distribution maps based on the 1960 census data were published or prepared in various forms but only one covered more than the central core of the country and all involved questionable methodology. In order to provide a more accurate and useful working document for Planning Agencies and all government offices, the Instituto de Investigación de Recursos Naturales (IRN) undertook the compilation of such a map late in 1966 as a project in its Geography section. The national census bureau co-operated, supplying the services of a geographer. Most of the work was accomplished in IRN including the drafting of the maps and final reproduction and distribution.

In the central most densely populated area of Chile compilation of the map was carried out at a scale of 1:250,000 on preliminary topographic maps. These maps, being preliminary,



contained a considerable number of errors, particularly in toponomy, but given the level of generalization at which the work was accomplished and the other sources of information available for cross-checking this fault did not prove serious. Compilation in the sparsely settled areas of the extreme north and south was done at the scale of publication, 1:500,000, on maps prepared from reductions of the topographic series.

Probably half the time taken to prepare the initial compilation was spent in defining the limits of the administrative units on which the census was based. No base map of the whole country showing all these divisions was available at either of the scales utilized and the preparation of this base should prove a useful side-product of the project. A variety of sources and documents were consulted in order to define the boundaries as accurately as possible. Most important were the 1:20,000 scale photo-maps prepared by the 1961 Chilean Aerophotogrammetric project for the central area of the country showing property boundaries and administrative divisions. Local texts giving boundary descriptions were consulted when necessary and helpful as well as the district and commune plans of the Census and Statistics Bureau. These latter maps vary widely in their accuracy, scale and dependability but outside the central area of the country and in the Cordillera de los Andes they were the only reference available. Where serious doubts about the accuracy of a boundary occurred, it was interpolated from known points and indicated as such by a special symbol.

Representation of the population was achieved in the conventional manner utilizing a system of dots and circles for the rural and urban populations respectively. One dot represented 100 inhabitants and circles were drawn to a cube root formula.<sup>1</sup> In the extremes of the country an open-center dot representing 50 inhabitants was found necessary to depict the sparser settlement found there. Urban areas with less than 500 inhabitants were represented by dots. The census statistics divide urbanized areas into a number of categories according to their size and functions. This system was partially adopted for the present work hence three different patterns were used on the circles to depict the categories of villages and towns, cities, and mining centers. To clarify the complicated situations encountered in the three largest urbanized areas, inset maps at larger scales were prepared. These insets are of Santiago, Valparaíso-Viña del Mar and Concepción-Talcahuano and show population density rather than population distribution as on the main map.

The dots and circles were located on the topographic maps using various aids. In the central portion of the country between Lat. 33° and 42° S., the 1:20,000 scale photo-maps already mentioned were very helpful. Dots were located where houses, farmsteads, or

<sup>1</sup>  $D = \sqrt[3]{P}$  where D = the diameter of the circle in mm. and P = the population of the urban area. This formula was used at the 1:250,000 compilation scale and was divided by 2 at the 1:500,000 scale. The formula tends to underemphasize the larger cities, a factor necessary to keep circles to reasonable size and still proportional.

other indications of human occupancy appeared on the mosaics within the district boundaries. The Census and Statistics Bureau commune and district plans were useful in locating villages and farms not appearing on the topographic sheets and outside the area where photo-maps were available. Property plan sketches in the Census and Statistics Bureau office were also used when necessary.

As in all attempts to represent reality cartographically some discrepancies have crept in. For example, certain construction camps related to hydro electric power plants and some mining camps have moved or disappeared since the census. An interesting case is that of a large dam construction project on the Rapel River some 100 km. southwest of Santiago (see illustration) <sup>where?</sup> which is now nearing completion. When the 1960 census was taken the camp did not exist. At the height of construction activity, however, the camp had a population of several thousand which has diminished again gradually and eventually will house only a few maintenance and supervisory personnel. It will have developed, grown and died between census periods and thus not show up on any population map or in population figures even though it represents a significant short term concentration of population. In the same manner one could cite the discrepancies presented by the rapid growth of suburbs around the larger cities as in Santiago where a new commune has been formed which did not exist in 1960 and hence does not appear on the population map.

The finished map is now being published in black and white solid copies. There are nine sheets divided according to zones established by the national planning agency in the central zone and, because of problems of size, by provinces in the north and south. Accompanying the visual presentation of the data are columns summarizing population figures according to districts, communes, provinces, and urban centers. Included in the package as well is a description of the methodology in Spanish and an attempt to describe and explain the general overall patterns of population distribution which can be outlined on the maps. Already considerable interest has been shown in the work and it is hoped that it will prove a useful tool in Chilean planning and development.

A further edition of the population distribution map is being prepared in Washington, D.C., by the Natural Resources Unit of the Inter American Union. This edition will be in color, at a scale of 1:1,000,000, consist of only one sheet, and should be available later this year. Both editions, or single sheets of the 1:500,000 scale map are obtainable through IRTI and any request or correspondence regarding cost etc. can be addressed to:

Sr. Miguel Ruiz Tagle P., Director Ejecutivo  
Instituto de Investigación de Recursos Naturales  
Casilla 2700  
Santiago  
Chile.

